Great Lakes Binational Toxics Strategy Stakeholder Forum

10 years of Strategy Progress and Ambient Environmental Monitoring

May 23, 2007

Chicago, Illinois

PCBs

Work Group Co-Chairs:

Tony Martig, U.S. EPA

Ken De, Environment Canada

PCB Challenge Goals: Overview

Canada

- 90% reduction of high-level PCBs (>10,000ppm)
- Accelerate destruction of stored high-level PCB wastes

Progress Overview:

- Goals met for PCBs in storage & accelerated destruction
- Reductions underway for PCBs in service

United States

- 90% reduction of high-level PCBs (>500 ppm)
- Proper management and disposal of PCBs removed from use

Progress Overview:

- Goals possibly met, but insufficient data available to determine status with accuracy

Progress Toward the Challenge Goals: Canada

Challenge Goals Met:

- 90.5% reduction of high-level PCBs *in storage* in Ontario (compared to 1993 baseline)
- Less than 400 PCB storage sites are remaining in Ontario (down from 1,529 in 1993)

Other Progress/Challenge Goals Underway:

- Updated PCB inventory data received in response to outreach; currently being incorporated into National Inventory Database
- Reductions being made for *in-service* PCBs

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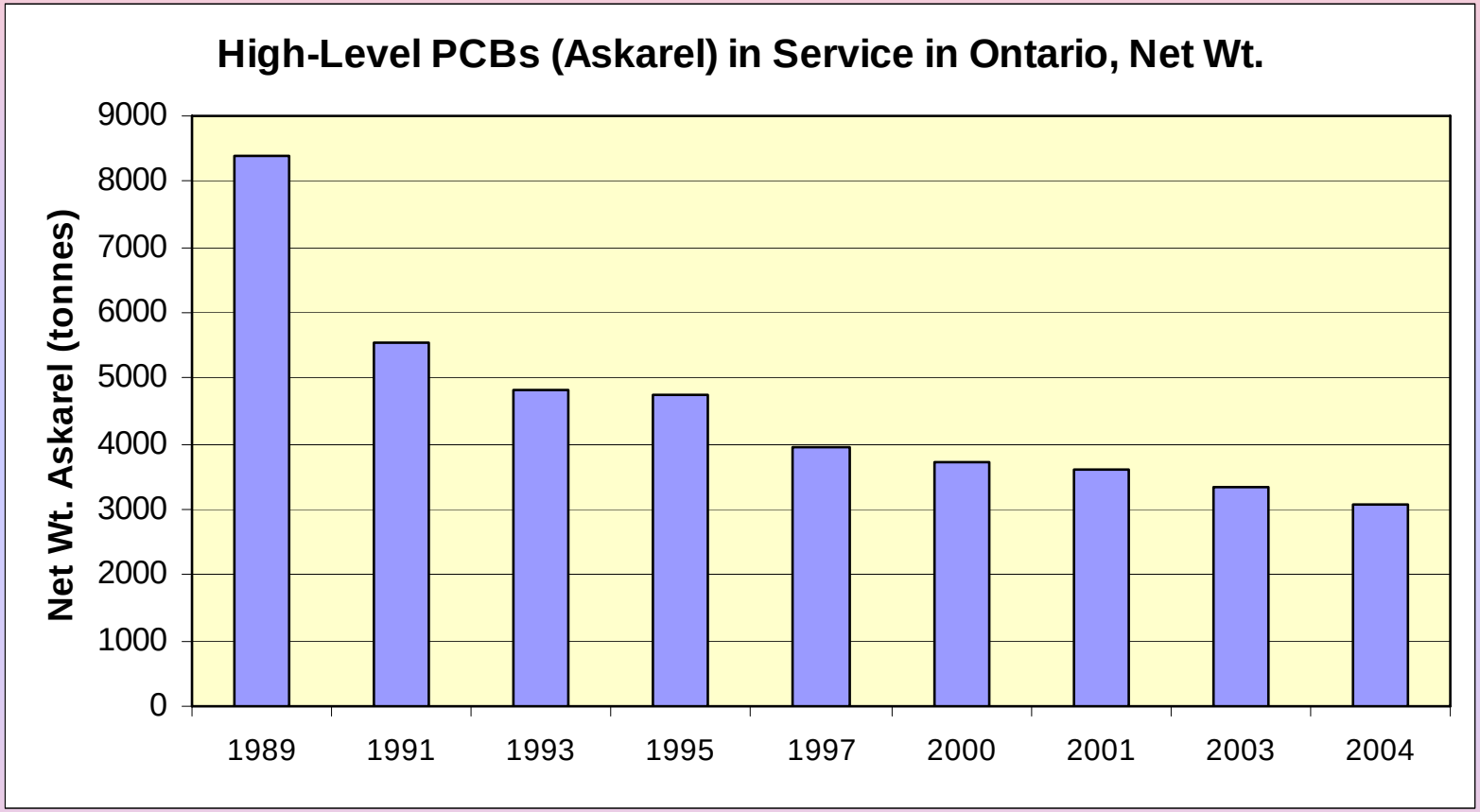
Canada: Progress Being Made for In-Service PCBs



67-70% reduction for in-service PCBs (compared to 1989 baseline)

Draft

Progress Toward the Challenge Goals: U.S.

Reduction Estimates:

- According to the PCB Transformer Registration Database, updated in August 2006, only about 14,700 PCB transformers were registered with U.S. EPA
- According to annual disposal data, at the end of 2003, an estimated 113,000 PCB transformers and 1,330,000 large PCB capacitors remained in use in the U.S.
  - Estimate obtained by subtracting the annual disposal data from the 1994 estimated baseline

Progress Toward the Challenge Goals: U.S.

- Reduction goals possibly met, but lacking sufficient data to determine with accuracy the status of progress toward the goal
- U.S. EPA currently compiling 2005 PCB disposal information and, based on the update of the PCB transformer registrations, will re-evaluate the data gaps in the inventory. 2006 PCB disposal information due in July.

Significant Projects Over Past 10 Years

Canada

- Environment Canada PCB Recognition and Award Program and Canadian Stakeholder PCB Phase-out Efforts
- New PCB Regulations Proposed in Canada

U.S.

- U.S. Stakeholder PCB Phase-out Efforts
- Software Tool for Evaluating PCB Transformer Phase-Out

Significant Projects #1:
EC PCB Recognition Program and Canadian Stakeholder PCB Phase-out Efforts

- Companies in the iron & steel, utilities, pulp & paper, and metals & mining sectors have voluntarily undertaken initiatives to eliminate PCBs.
- EC established PCB Recognition and Award Program for companies achieving 90% or better elimination of high level PCBs
  - 8 Ontario companies received award so far, and 4 additional companies selected for future awards
  - Case studies for all of the award recipients have been developed

Draft

Significant Projects #2:
New Canadian PCB Regulations Proposed

- New PCB Regulations published in *Canada Gazette I (11/4/2006)*
  - Impose strict phase-out dates for certain categories of PCBs
  - Prohibit re-use of transformer oils with 2-50 ppm PCB

Draft

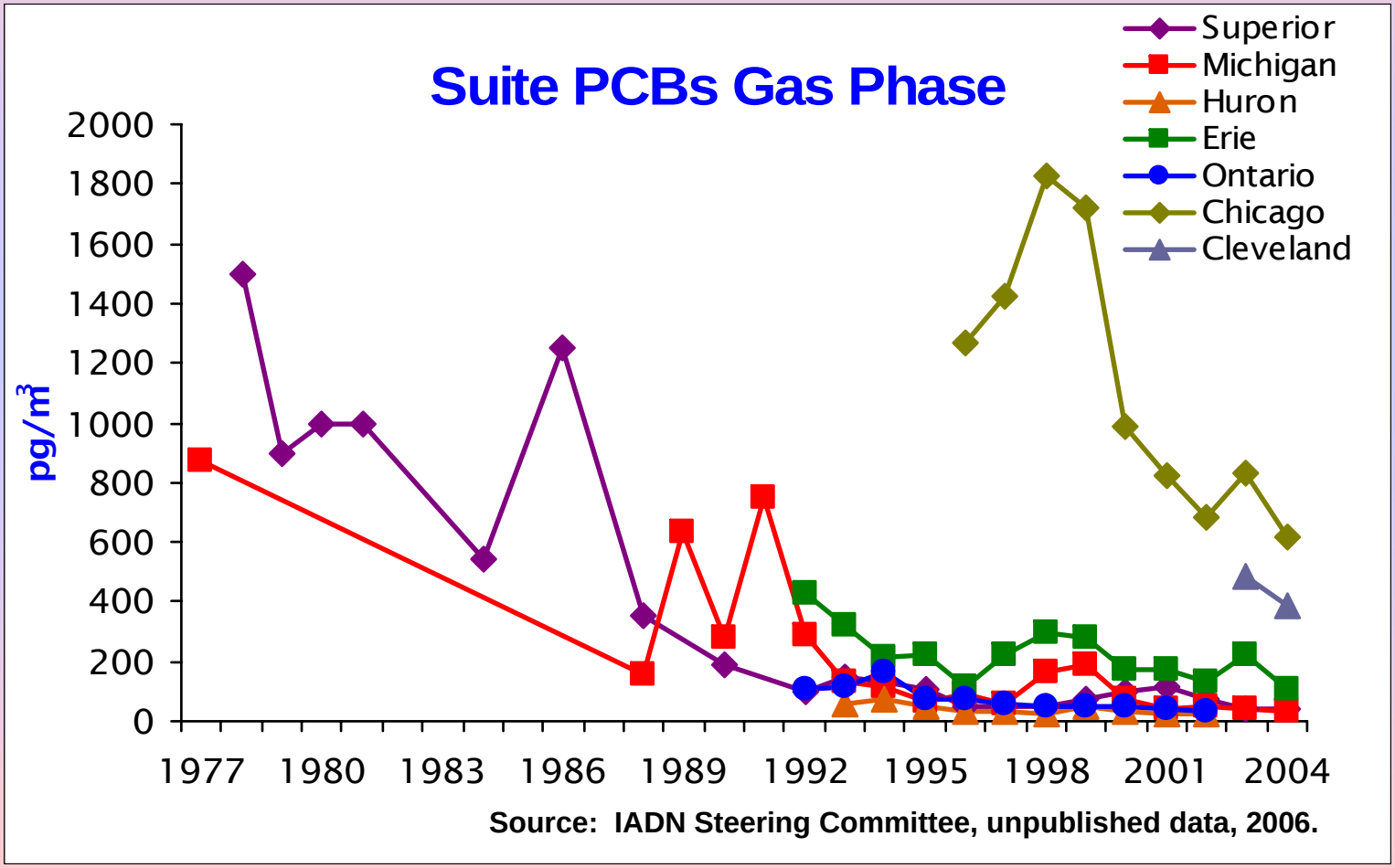
Significant Projects #3:
Cost Comparison Tool for Evaluating PCB Transformer Phase-Out

- A PCB software/spreadsheet tool to determine and compare the costs of phasing out PCB transformers against the costs of continued use developed in 2006
  - Evaluation by EPA and pilot-tests currently underway

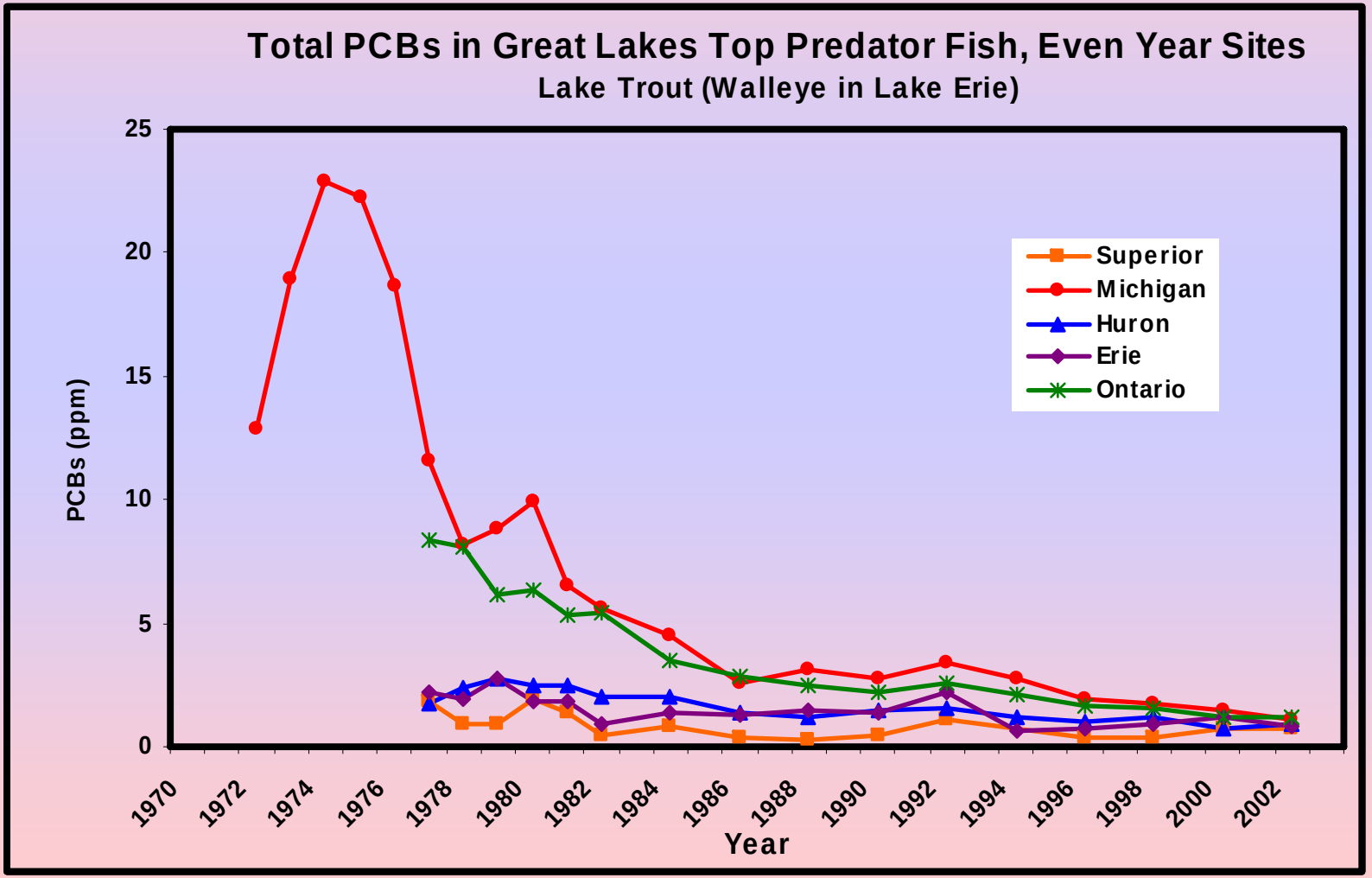
Significant Projects #4:
U.S. Stakeholder PCB Phase-Out Efforts

- **Voluntary Phase-Out Efforts Continue:**
  - **Most USWAG companies have procedures in place to ensure >50 ppm PCB equipment identified during repair/servicing is disposed and/or retrofilled (reaffirmed in April 2006)**
  - **USWAG member companies in the GL basin have dedicated efforts to identify/remove PCB-containing equipment from service**
  - **There have also been PCB phase-out efforts by major automobile manufacturers and steel producers**

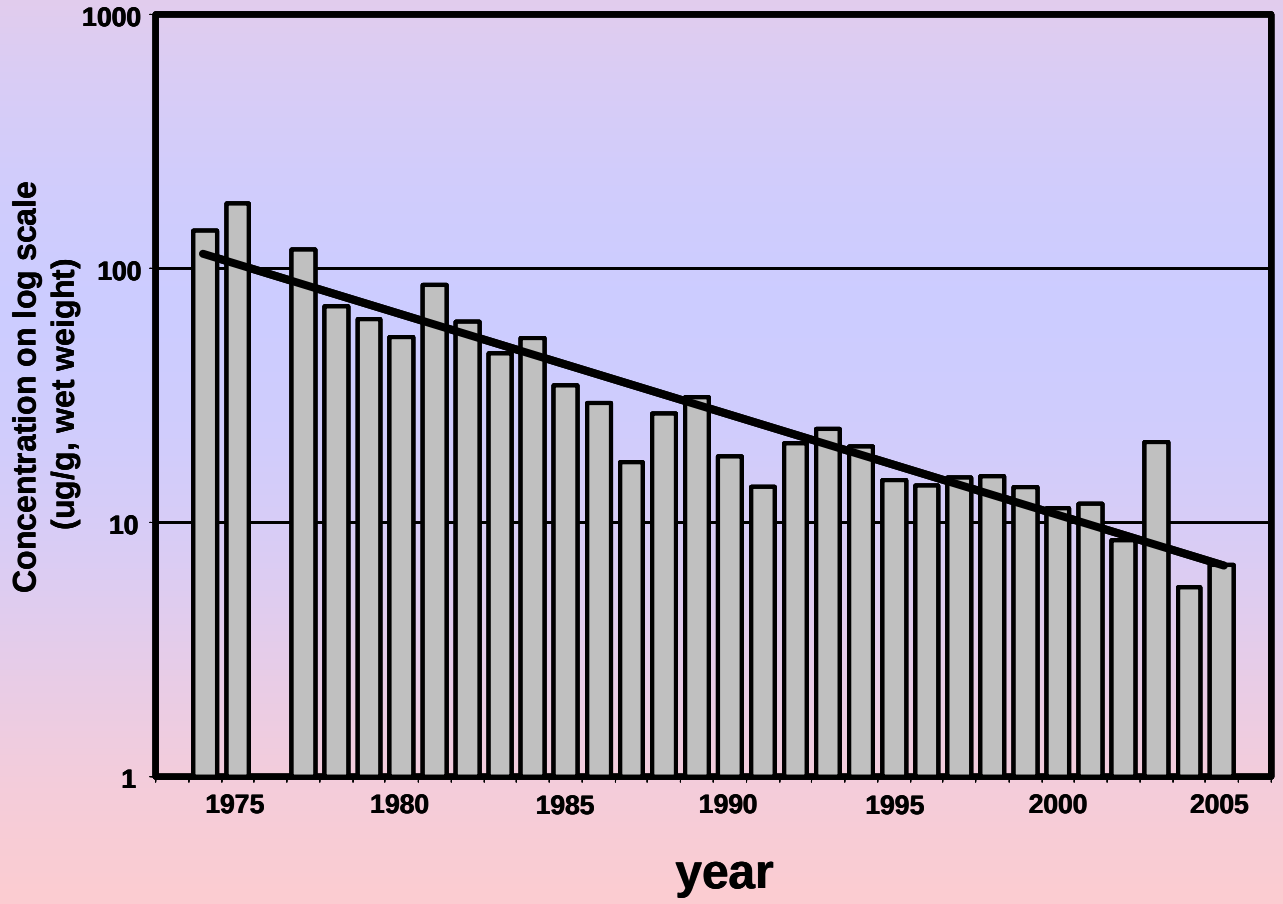
Environmental Analysis Findings: Gas-Phase Annual Average Total PCB Concentrations



Environmental Analysis Findings: PCB Trends in Great Lakes Fish



Environmental Analysis Findings: PCBs in Herring Gull Eggs, Snake Island, Lake Ontario, 1974-2005



Summary of 2006 Management Reassessment Findings

- Continue active Level 1 status, with initial priority placed on collecting better data on PCB sources and environmental levels to:
  - prioritize the remaining PCB sources;
  - elucidate PCB trends and impacts on the environment; and
  - assess the ability of the GLBTS to effect further reductions.
- Continuing existing programs to decommission PCB-containing equipment and control releases from storage and disposal facilities

Outlook: Next Steps and Future Work Needed to Meet Challenge Goals

- Continue to seek PCB reduction commitments through PCB reduction commitment letters and other PCB phase-out efforts
- Continue to publicize voluntary achievements in PCB reduction, through the EC "Recognition & Award" and other programs
- Continue to update PCB equipment inventories in the U.S. and Canada
- Continue outreach/compliance promotion efforts (for new PCB Regulations in Canada)
- Implement PCB Management Assessment recommendations, with focus on source identification and assessment

U.S. Utility Industry PCB Phase-Down Efforts

Jim Roewer
USWAG

GLBTS Stakeholder Forum
23 May 2007

Utility Solid Waste Activities Group (USWAG)

- Formed 1978
- Approximately 80 utilities, energy companies & associations
- Members deliver electricity to >95% of consumers in the U.S.

USWAG

Existing PCB Phase Down Efforts

- Removal on Failure of Equipment
- Removal During Service / Maintenance
- Targeted Equipment Removal

USWAG

Removal on Failure

- All equipment that fails and cannot be repaired is disposed of per regulatory requirements
- Most PCB or PCB-containing Equipment that can be repaired is retrofilled and returned to operation

USWAG

Removal for Service / Maintenance / Upgrade

- Equipment removed from operation is analyzed (when sampling can occur)
- Equipment containing >50 ppm PCBs (0.005 %) is drained & refilled w/ no-PCB dielectric fluid or disposed
- PCB equipment is generally not returned to operational service

USWAG

Targeted Equipment Removal

- Identification & Removal (Through Retrofill and/or Disposal) of PCB Equipment (e.g., Large Capacitors)
- Properly Functioning Equipment Does Not Pose a Risk
  - Conducted to Remove Potential Future Liability Associated with Spills
  - Conducted to Minimize *Perceived Risks* Associated with PCBs

USWAG

Downsides of Identification & Removal

- Large Sampling/Testing Burdens & Costs
- Removal of Functioning, Reliable Equipment
- Reliability/Performance Concerns of Testing or Replacing Equipment

USWAG

Downsides of Identification & Removal

- Increases Operational Expenses (Early Retirement of Assets and Investment in New Equipment)
- Low Hanging Fruit Phenomenon
- Increased Per-Unit Costs of Identification & Removal of PCB-Containing Equipment

USWAG

PCB Reduction Efforts – Results

- **AEP:** In 2005-06 Removed >200 Large Capacitors, ~540 PCB Articles (>200 PCB Transformers) & ~900 PCB-contaminated articles
- **Exelon:** As of 2006, Removed 880 Large Capacitors, 10 Askeral Transformers & Regulators (Chicago); >96% Large Capacitors at Substation Removed/Replaced

USWAG

PCB Reduction Efforts – Results

- **Duke Energy:** Have Tested all Large Equipment & All Transformers at Schools; Removed or Retrofilled all >50 ppm PCB
- **Xcel Energy:** In 2006, Removed 4 Known PCB Transformers, >39,000 kg PCB Articles, Container, Oil & Equipment and ~296,000 kg PCB Contaminated Articles, etc.

USWAG

PCB Reduction Efforts – Results

- **NIPSCO:** Since 1994, Removed >4500 Pieces of Suspect Equipment, Including 56 Transformers; Estimate that <1% PCBs Remain
- **Detroit Edison:** 2005–06, Removed > 120 PCB Transformers & Equipment and >800 Pieces of PCB-Contaminated Equipment

USWAG

PCB Reduction Efforts – Results

- **We Energies:** Since 1999, Removed >1300 PCB Transformers, Large Capacitors & Bushings
- **Consumers Energy:** Since 1994, Removed 347,000 gallons of PCB Oil (31,000 in 2005 alone)
- **GRE:** Evaluated >99% of Testable Equipment; PCB Equipment at DC Substation to be Removed by 2011

USWAG

Development of A Coordinated Program

- One Size DOES NOT Fit All
  - Operational Differences
  - Differences in Equipment Types, Configuration
  - Financial Considerations
  - Tracking Differences (number, %, gallons)
- Working to Develop an Integrated Reduction Program

USWAG

Utility Industry PCB Management Programs

- PCB Transformers (>500 ppm PCBs) Properly Registered with US EPA
- PCB Equipment Use & Management Controlled per Regulations
- PCB Equipment Removed When Found Through Repair/Service/Maintenance
- Targeted Early Replacement of PCB Equipment

USWAG

USWAG Goals

- Promote the retirement of Equipment Identified as PCB
- Developing & Sharing Information to Assist in Identification
- Assist Utility Customers with Voluntary Phase-Down Efforts
- Promote Phase-Down Awareness
- Coordinate with Other Industry Groups

USWAG

Questions?

Jim Roewer

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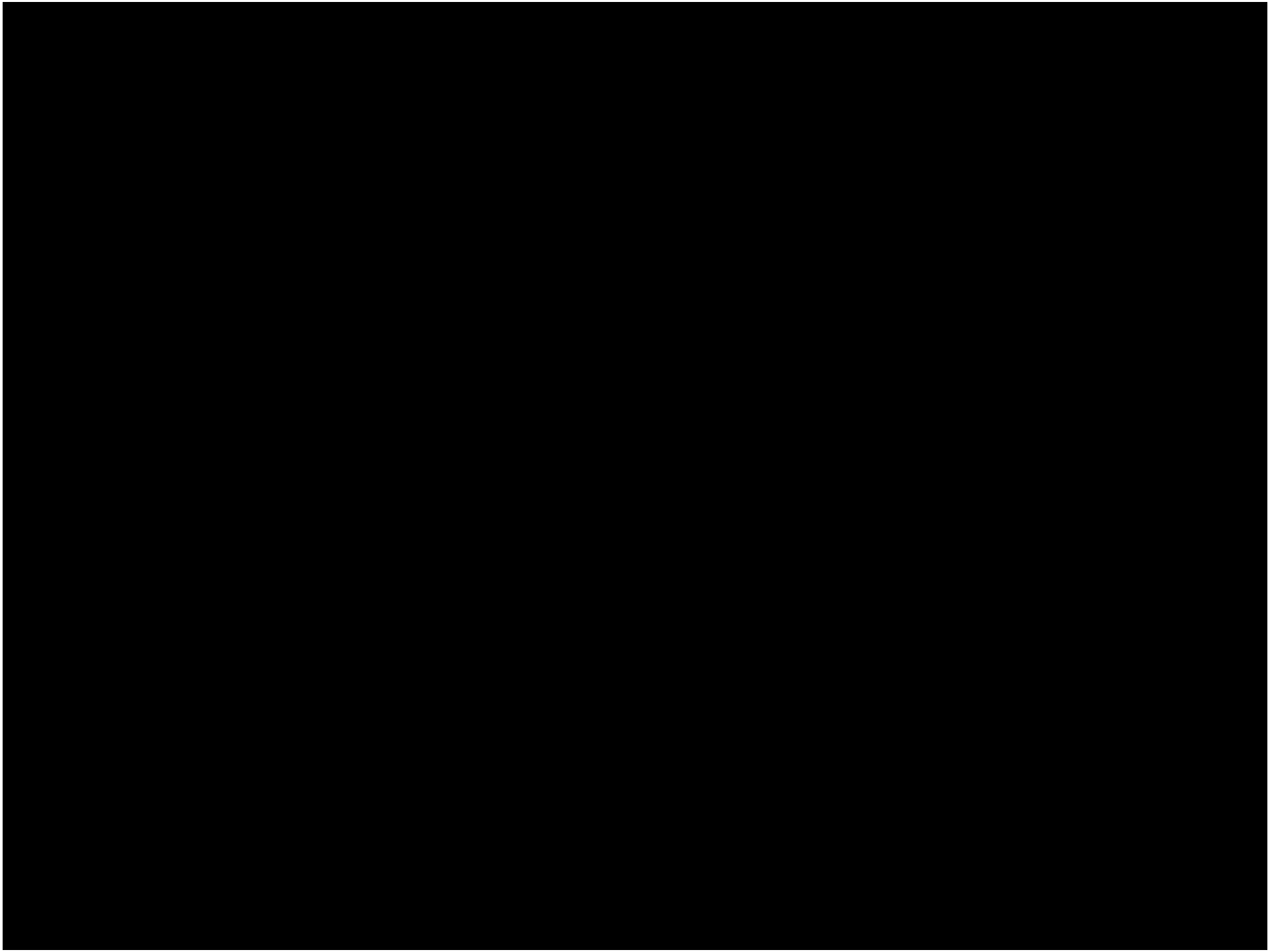
www.uswag.org

USWAG



Dioxins and Furans

Work Group Co-Chairs:

Anita Wong, Environment Canada

Erin Newman, U.S. EPA

Dioxin/Furan Challenges and Progress

Canadian Challenge Goal

- 90% reduction *
- by 2000

* All media within Great Lakes Basin, base year 1988

- Progress: 89% reduction in total releases within GL Basin

US Challenge Goal

- 75% reduction *
- by 2006

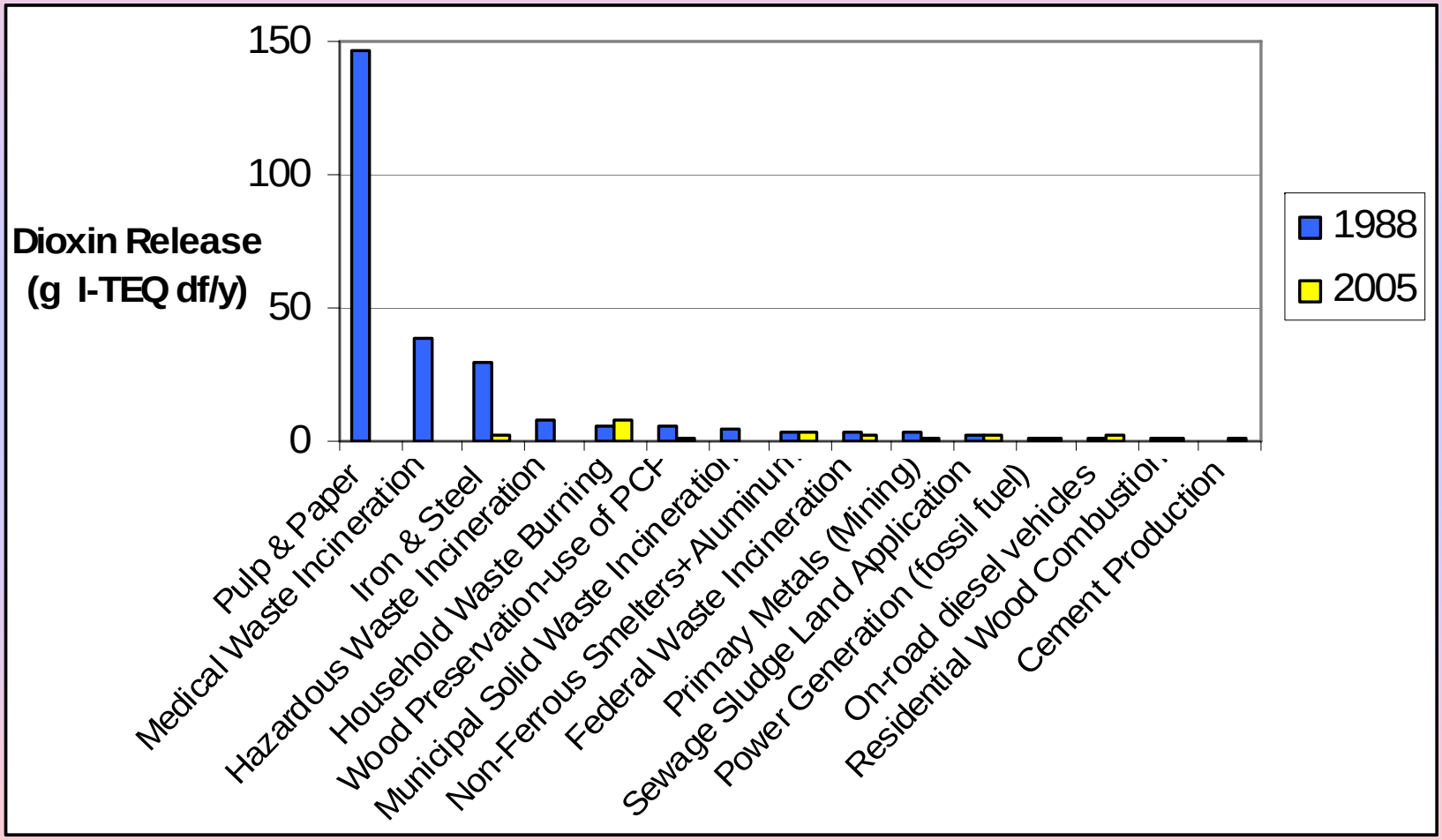
• Aggregate of air releases nationwide and water releases within the Great Lakes Basin, base year 1987

- Progress: Goal has been met
- 2000 emissions ~1,422 grams 89% reduction from 1987 baseline

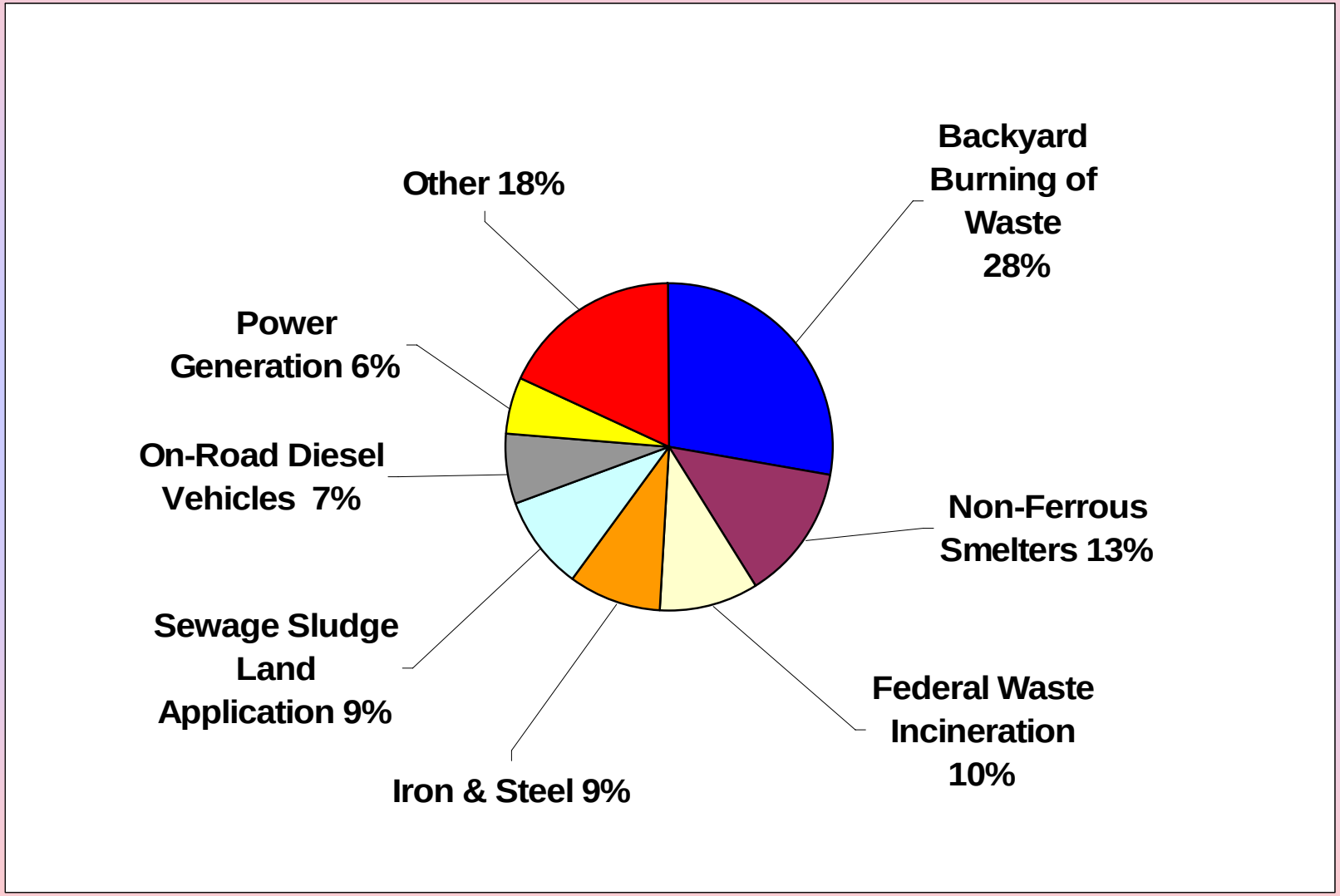
Tracked Top Sources of D/F Release Significant Reductions Over Past 10 Years

- Municipal waste incineration
  - MACT, CWS, closure of SWARU incinerator
- Medical waste incineration
  - MACT, CWS, Ontario closure regulation
- Hazardous waste incineration/cement kilns
  - MACT, CWS, closure of Bruce nuclear incinerator
- Iron sintering emissions
  - CWS, Algoma closure
- Secondary Copper Smelters
  - MACT
- Pulp and Paper
  - CEPA Regulations, CWA

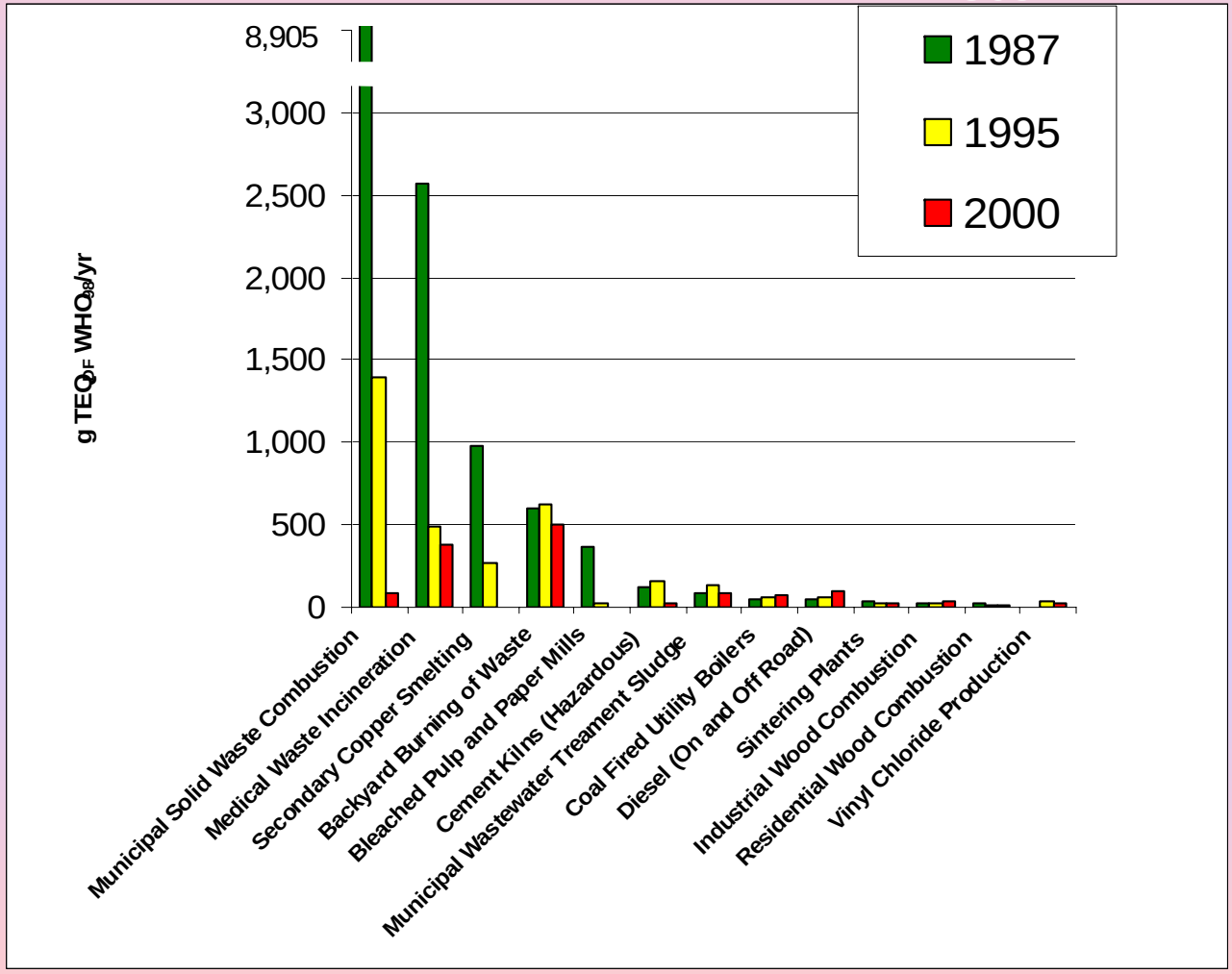
Top Ontario 1988/2005 Dioxin/Furan Release Sources



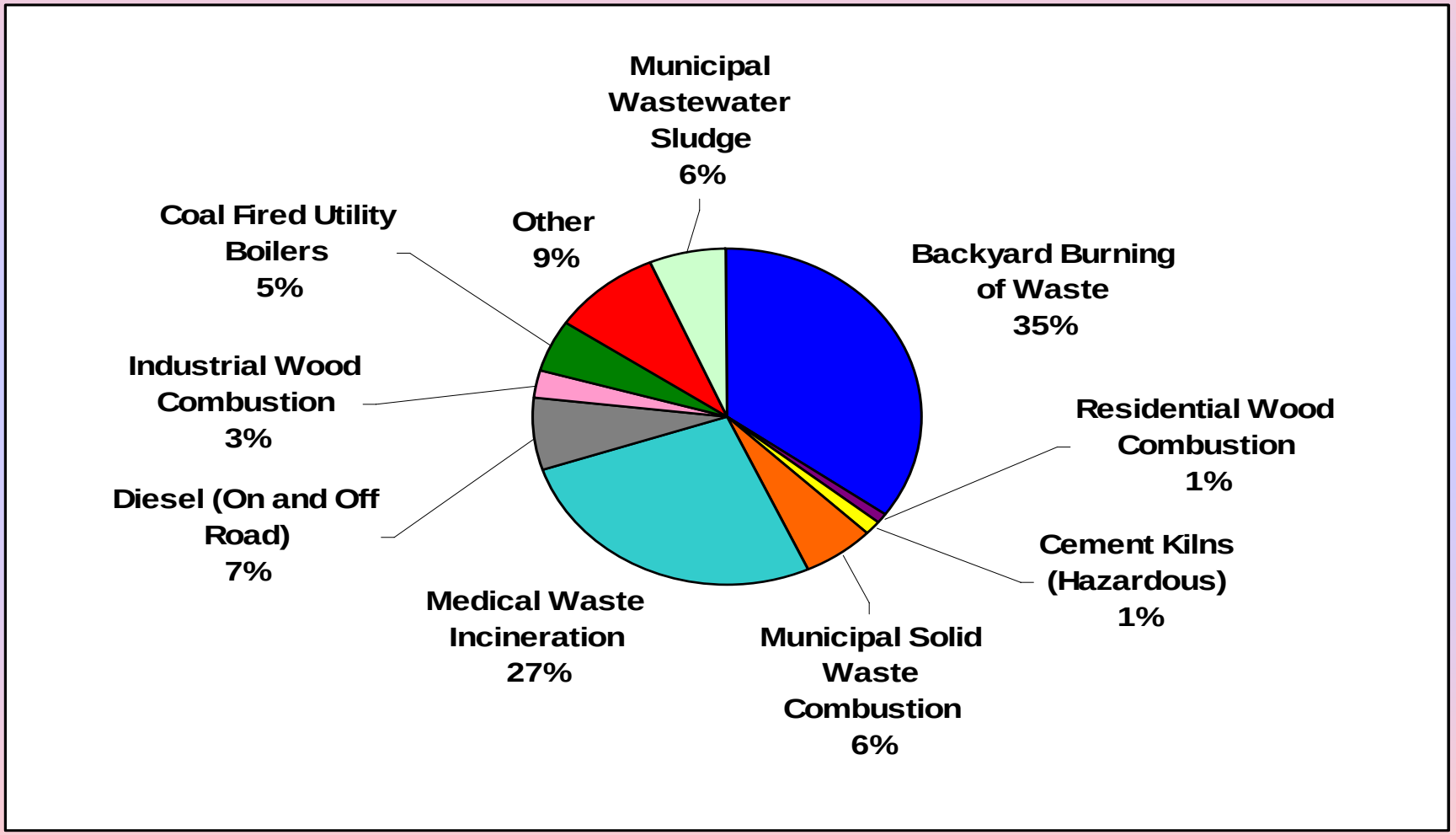
Ontario 2005 Dioxin/Furan Release Sources



Top U.S. Inventoried Dioxin Emissions for 1987, 1995, & 2000 (in grams of $TEQ_{DF\text{-}WHO98}$)



2000 Top U.S. Dioxin/Furan Releases

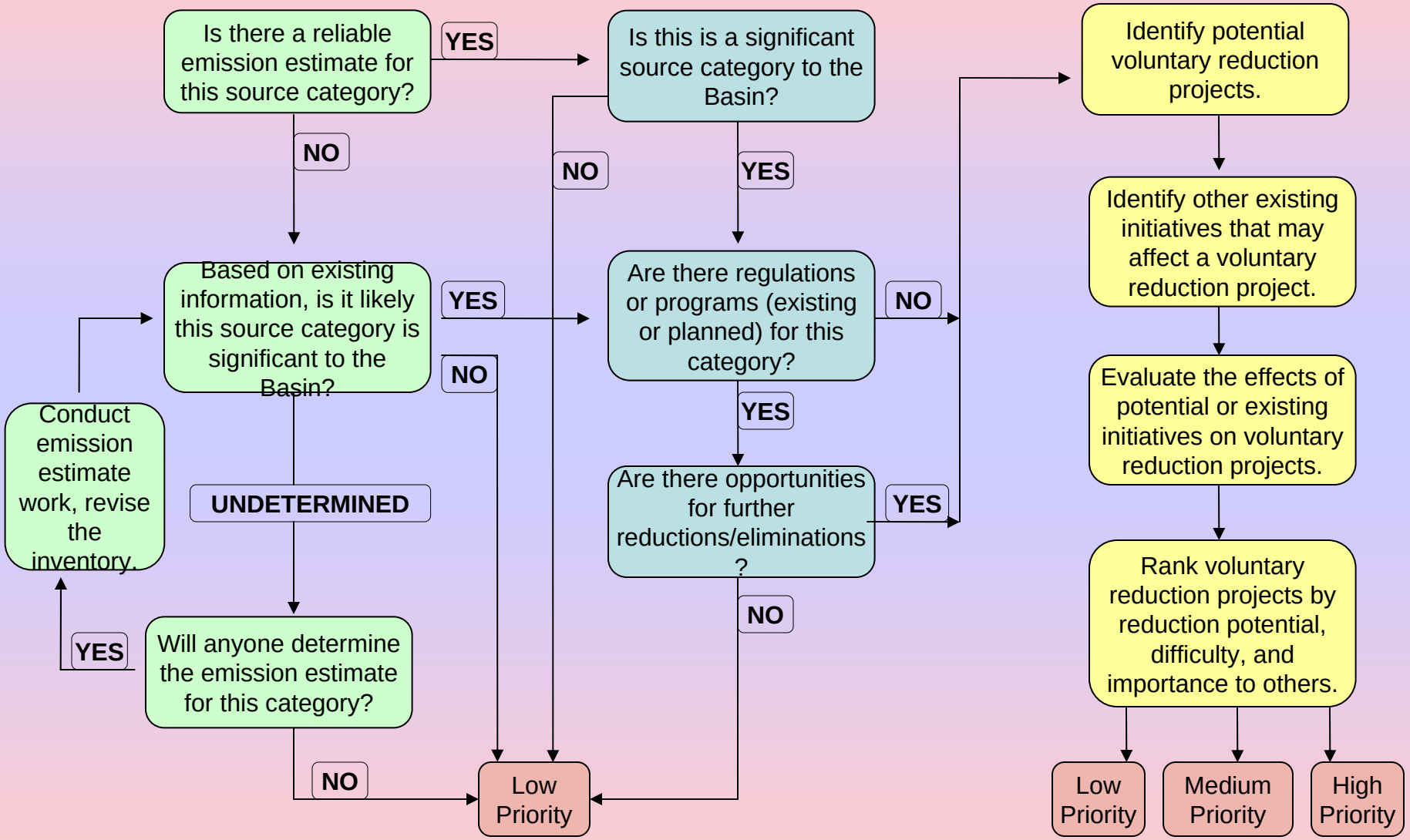


Significant Projects Over Past 10 Years

- Prioritized Sources using the Dioxin Decision Tree Process
- Created the Burn Barrel Subgroup
  - Reduction programs around the Basin
  - Website
  - Learn Not to Burn CD
- Developed issues papers on sources of uncontrolled combustion
- Characterized sources in several studies
  - Landfill fires
  - Ash management
  - Secondary metal smelting
  - Combustion residue
- Examined joint issues with other GLBTS Workgroups (coplanar PCBs, wood preservation, residential wood combustion, sewage sludge application, clean diesel)
- Discussed pathway intervention activities with health/food officials

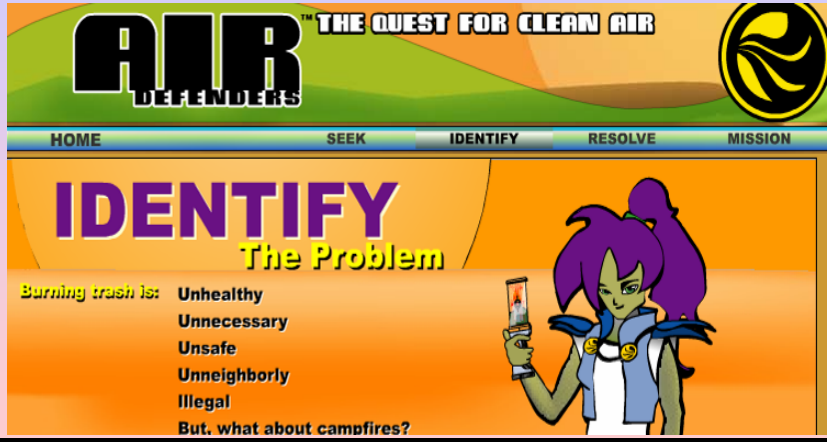
Significant Project #1

Dioxin/Furan Workgroup Decision Tree for Prioritizing Sources



Significant Project #2:
Burn Barrel Subgroup

- Ongoing Federal, State/Province and Tribal/First Nations activities



Learn Not to Burn

THE GREAT LAKES BINATIONAL TOXICS STRATEGY

May 09, 2007

Newsletter

Roundtable

Canadian Centre for Pollution Prevention

Leaders in Shaping the Future of Consumption and Production

Tell a Friend

Francais

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  - CleanPrint Canada
  - Responsible Pest Management
  - Great Lakes Trash and Open Burning Website
    - Background
    - Concerns

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Home > Affiliated Websites > Great Lakes Trash and Open Burning Website

Great Lakes Trash and Open Burning Website

www.openburning.org

- Background
- Concerns About Burning
- Legislative-Policy Framework
- Programs/Strategies
- Successes
- What's New?

"reducing the practice of residential garbage burning within the Great Lakes Basin."

Canada EPA

Significant Project #3:
Uncontrolled Combustion Issue Papers

- Four issue papers developed for:
  - Agricultural Burning
  - Structure Fires
  - Tire Fires
  - Wildfires and Prescribed Burning
- The papers provide estimates of burning activity and emissions in the Great Lakes States and Ontario
- Due to close proximity to our food source, workgroup is examining agricultural burning activities more closely

Significant Project #4:
Source Characterization

- Improved release inventory and understanding of sources through studies
  - Combustion residues
  - Landfill fires
  - Ash management
  - Secondary metal smelting
  - Residential wood combustion
  - Stack tests

Significant Project #5:
Examined Joint Workgroup Issues

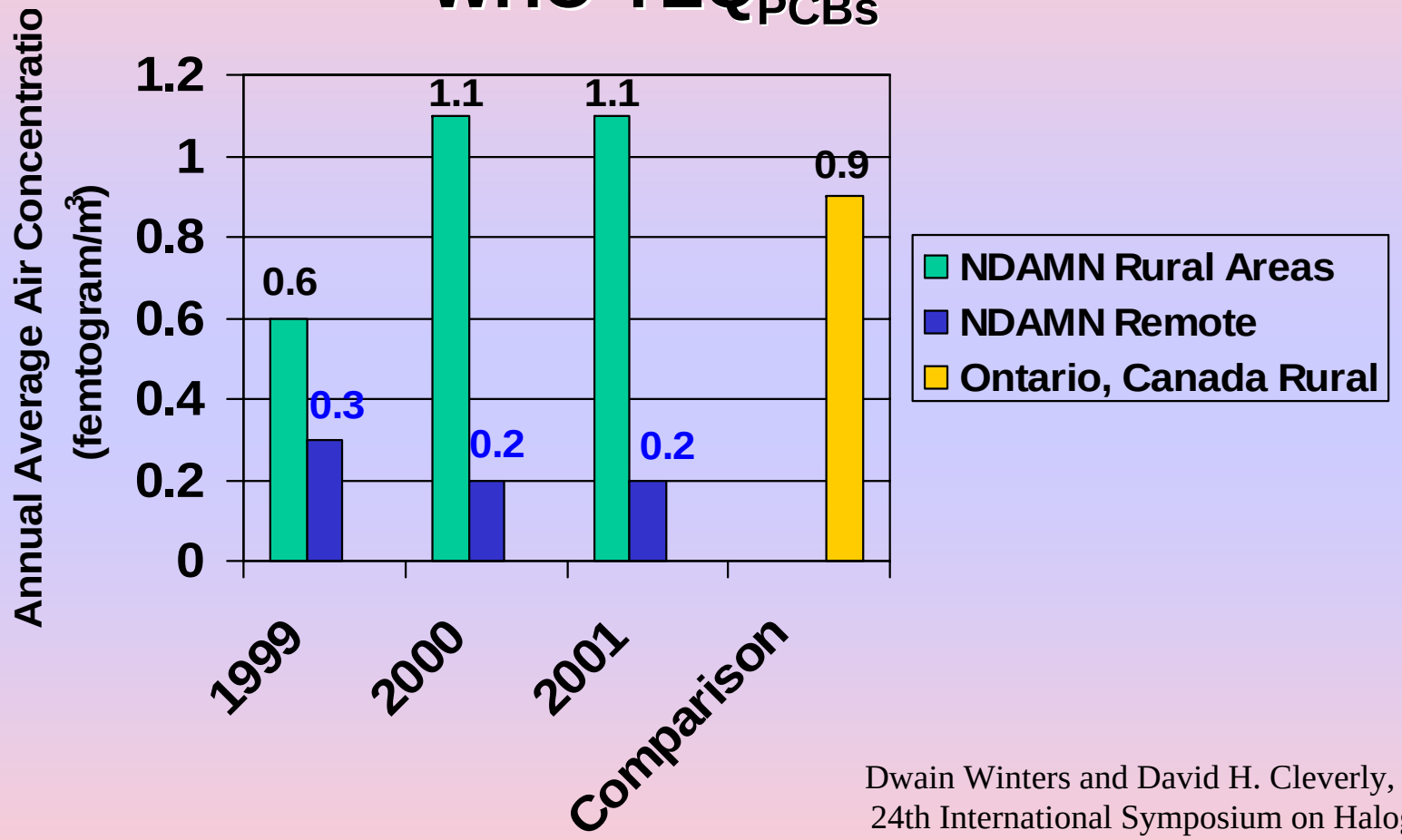
- Examined joint issues with other GLBTS Workgroups
  - Coplanar PCBs – may be of significant risk, but will be reduced through ongoing PCB reduction work
  - Wood preservation – supported USWAG MOU on secondary uses of treated wood
  - Residential wood combustion – referred to B(a)P/HCB workgroup
  - Sewage sludge application – determined to be of low risk for dioxin
  - Clean diesel – both countries have ongoing regional and national programs to accelerate clean diesel technologies

Significant Project #6:
Pathway Intervention

- Food is the main route of human dioxin exposure
- Discussed pathway intervention activities with health/food officials
- Determined that sources of concern from an inventory perspective are the same from a human health perspective
- Will continue to focus on burn barrels and agricultural burning which have the greatest opportunity for pathway intervention

Average Nationwide Air Concentrations (fg/m³)

WHO-TEQ$_{PCBs}$

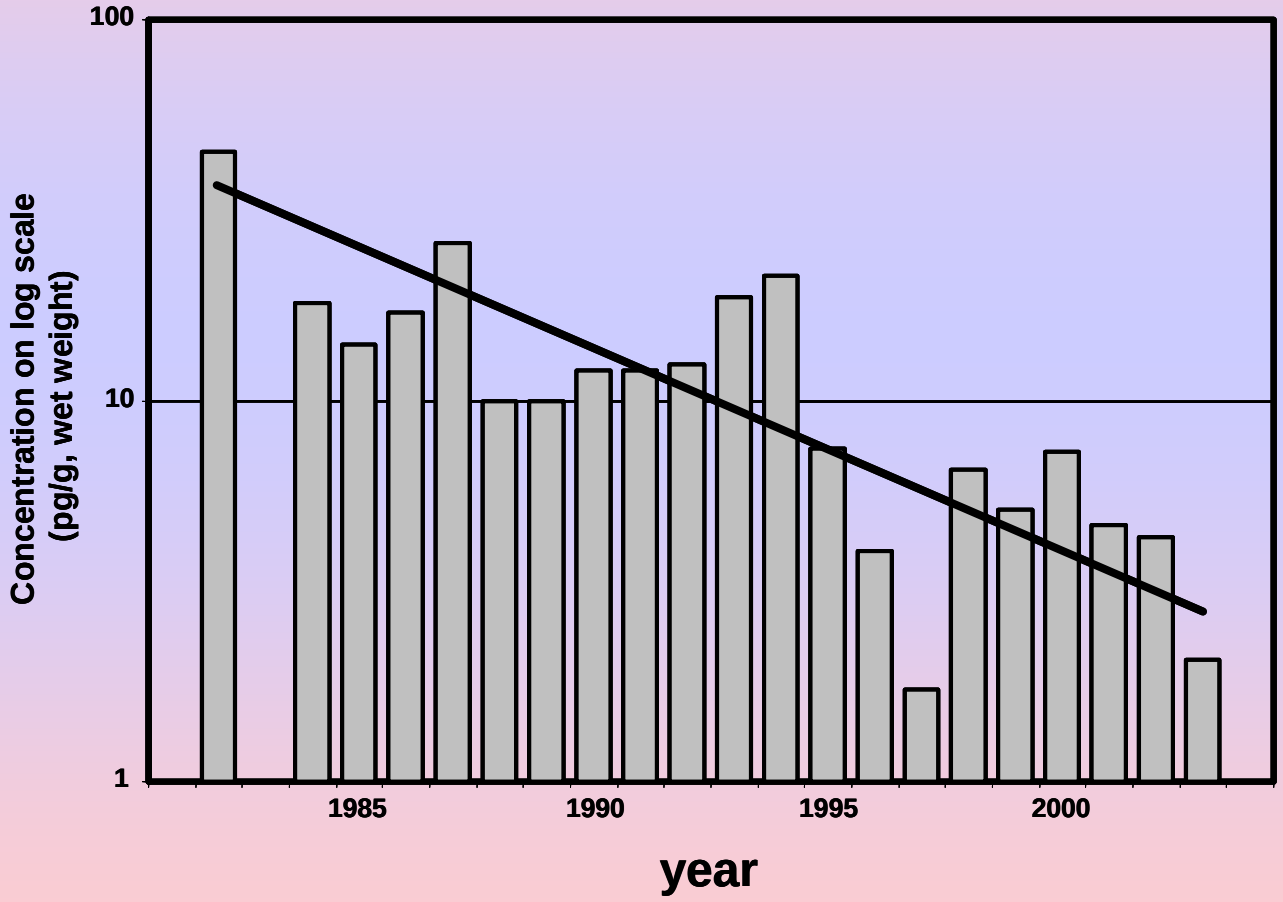


Dwain Winters and David H. Cleverly, USEPA
24th International Symposium on Halogenated Environmental Organic Pollutants and POPs
September 2004

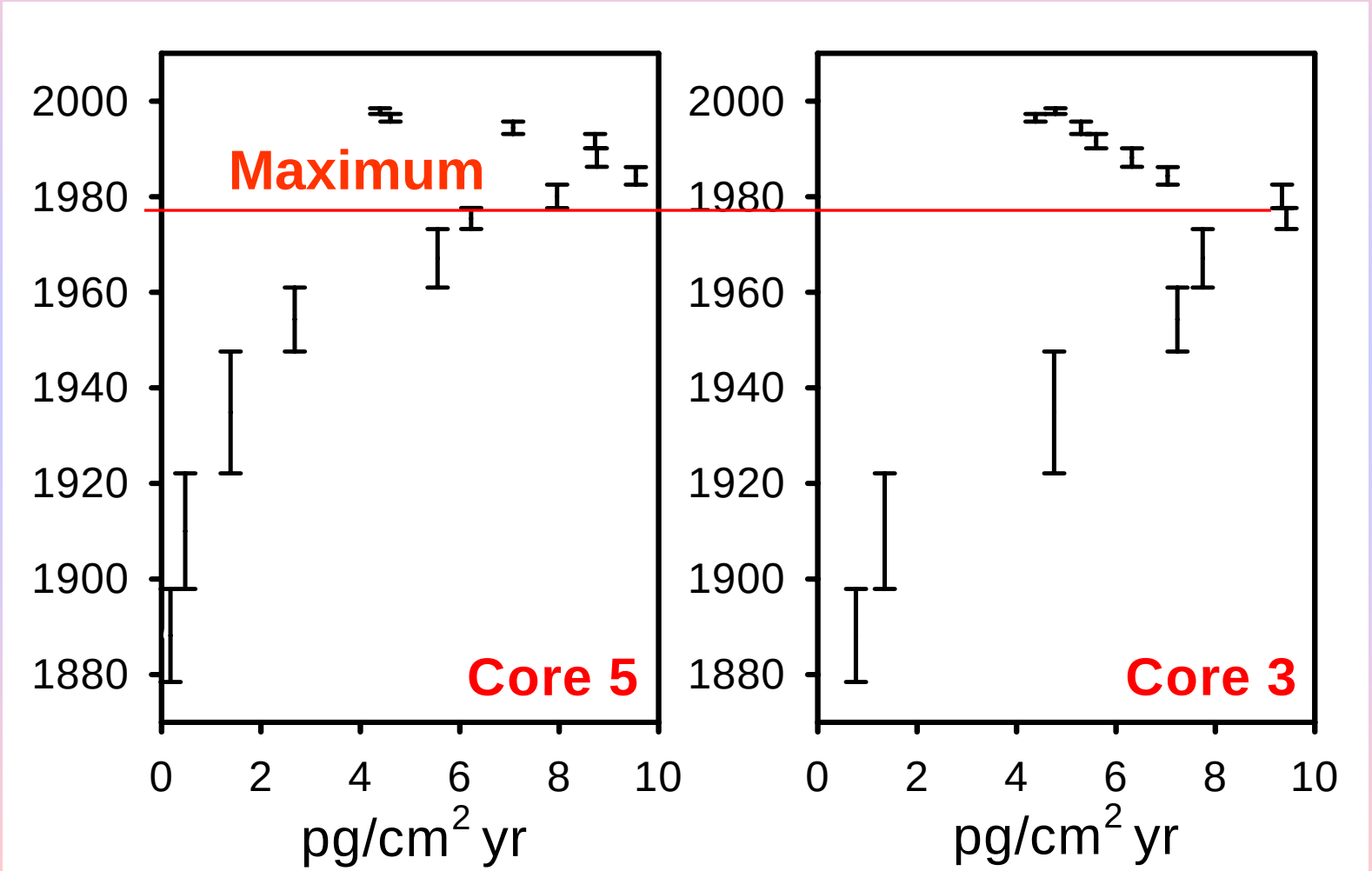
Air Emissions in the Great Lakes

Urban Areas Higher than Rural Areas

TCDD in Herring Gull Eggs, Big Sister Island, Lake Michigan, 1984-2003. Source: CWS



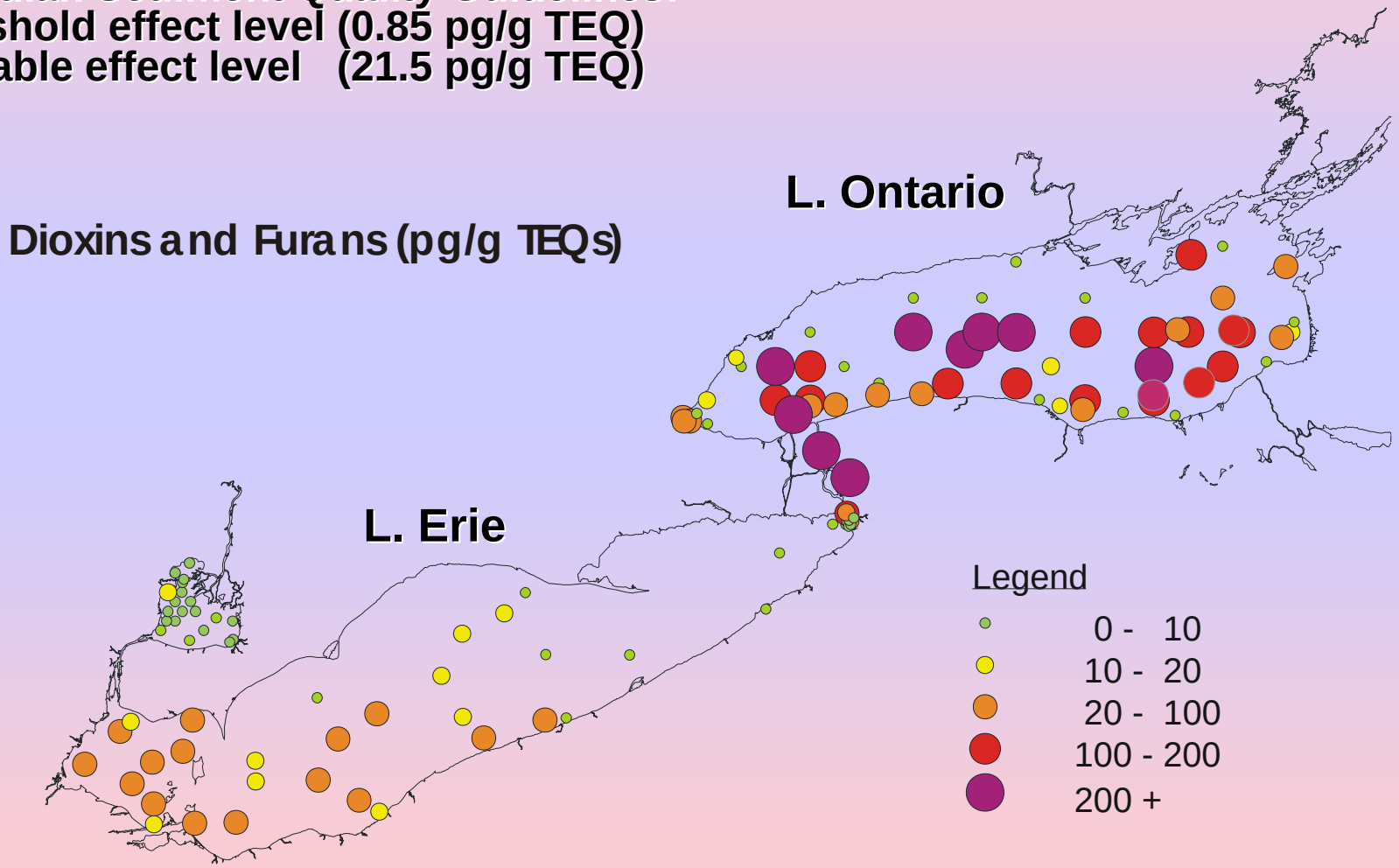
Total Dioxin Fluxes to the Sediment of Lake Siskiwit



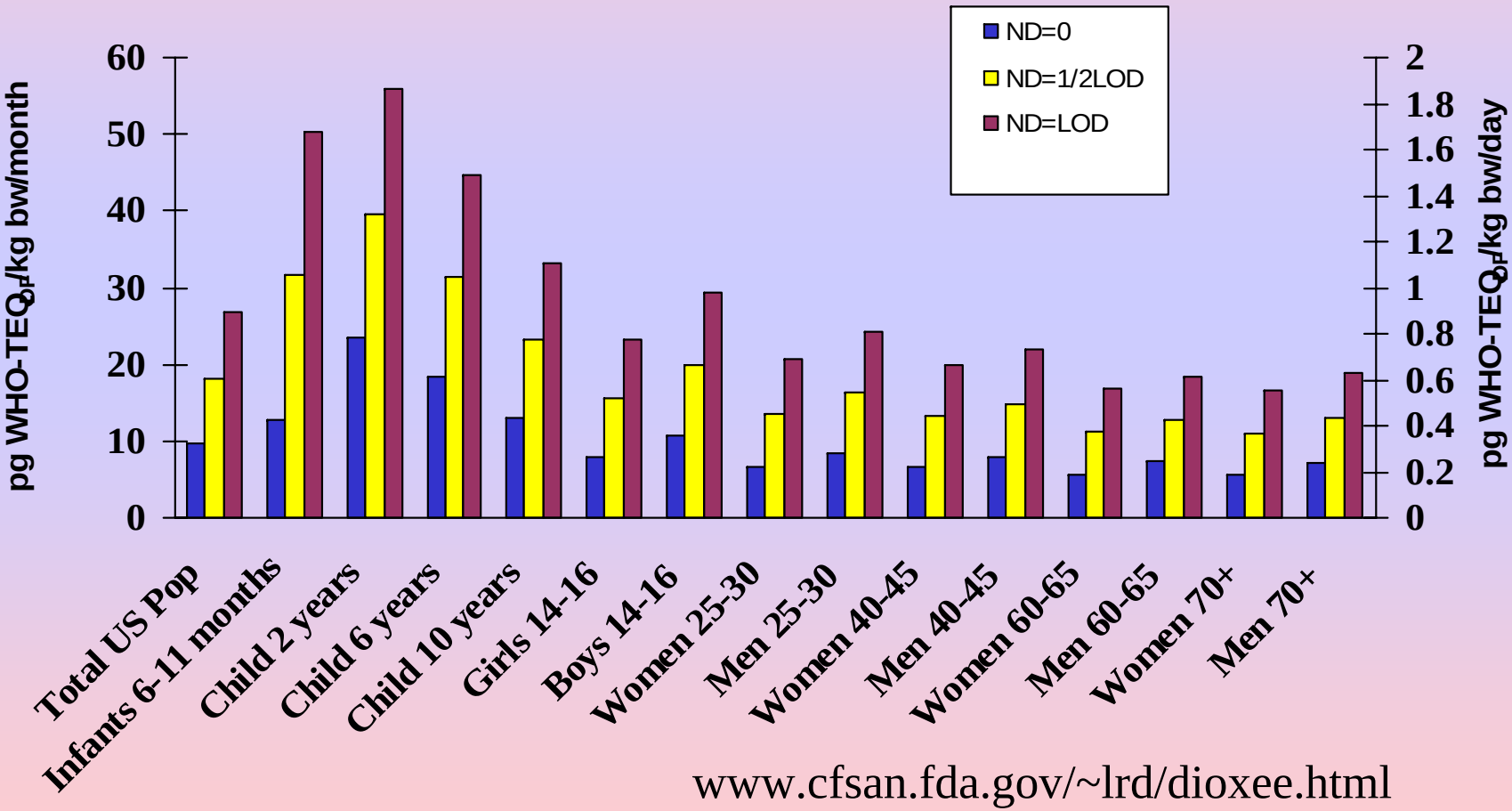
Courtesy of Dr. Ron Hites

Levels in Great Lakes Sediments

Canadian Sediment Quality Guidelines:
Threshold effect level (0.85 pg/g TEQ)
Probable effect level (21.5 pg/g TEQ)



PCDD/PCDF Exposure Estimates from 2001-2004 Total Dioxin Study Foods



www.cfsan.fda.gov/~lrd/dioxee.html

Summary of Ambient Environmental Data

- There are decreases in ambient levels across various media (e.g. sediment cores and herring gull eggs)
- Some media still show levels above benchmarks
- More trend data is needed to fully assess dioxin releases
- Levels in food continue to persist and still may impact human health

Level 1 Reassessment Report Conclusions

- Continue active Level 1 status with periodic reassessment
- Environmental data show a declining trend over the long term, however, levels continue to exceed criteria in some media and to affect human exposure
- Consider framing new qualitative challenge goals
- Continue Burn Barrel Subgroup efforts
- Work with other GLBTS workgroups on common issues of concern such as uncontrolled combustion and coplanar PCBs
- Continue to fill inventory gaps and seek source reduction where feasible
- Consider reducing level of effort, if appropriate

Outlook for Future Actions

- Continue Burn Barrel Subgroup activities
- Exploring reduction opportunities related to agricultural waste burning
- Continue source characterization work and seek reductions from top sources
- Track releases and ambient air concentrations

Burn Barrel Reduction Efforts

Carri Lohse-Hanson
Minnesota Pollution Control Agency

Three Open Burning Surveys

- WLSSD did the first survey in 1999 and focused on northeastern Minnesota and northwestern Wisconsin (Lake Superior watershed) households. Interesting factoid: 35% of the people who burned said nothing would make them stop.

- The second survey, also done by WLSSD, focused on local government officials in the Minnesota, Wisconsin and Michigan parts of the Lake Superior watershed in 2002. Interesting factoid: complaints drive enforcement of open burning ordinances although wildfire cause investigation was next most important.

- The last was a statewide survey conducted in 2004 by the MPCA. Interesting factoid: statewide, 45% of the rural households surveyed occasionally burn trash.

Barrel-for-a-Barrel Project
Let this nice man take your burn barrel…

He'll put a rain barrel in your car…

And we have a dumpster full of burn barrels and a couple pages of signatures from people who've signed a pledge to stop trash burning.

Fond du Lac Reservation Health Fair

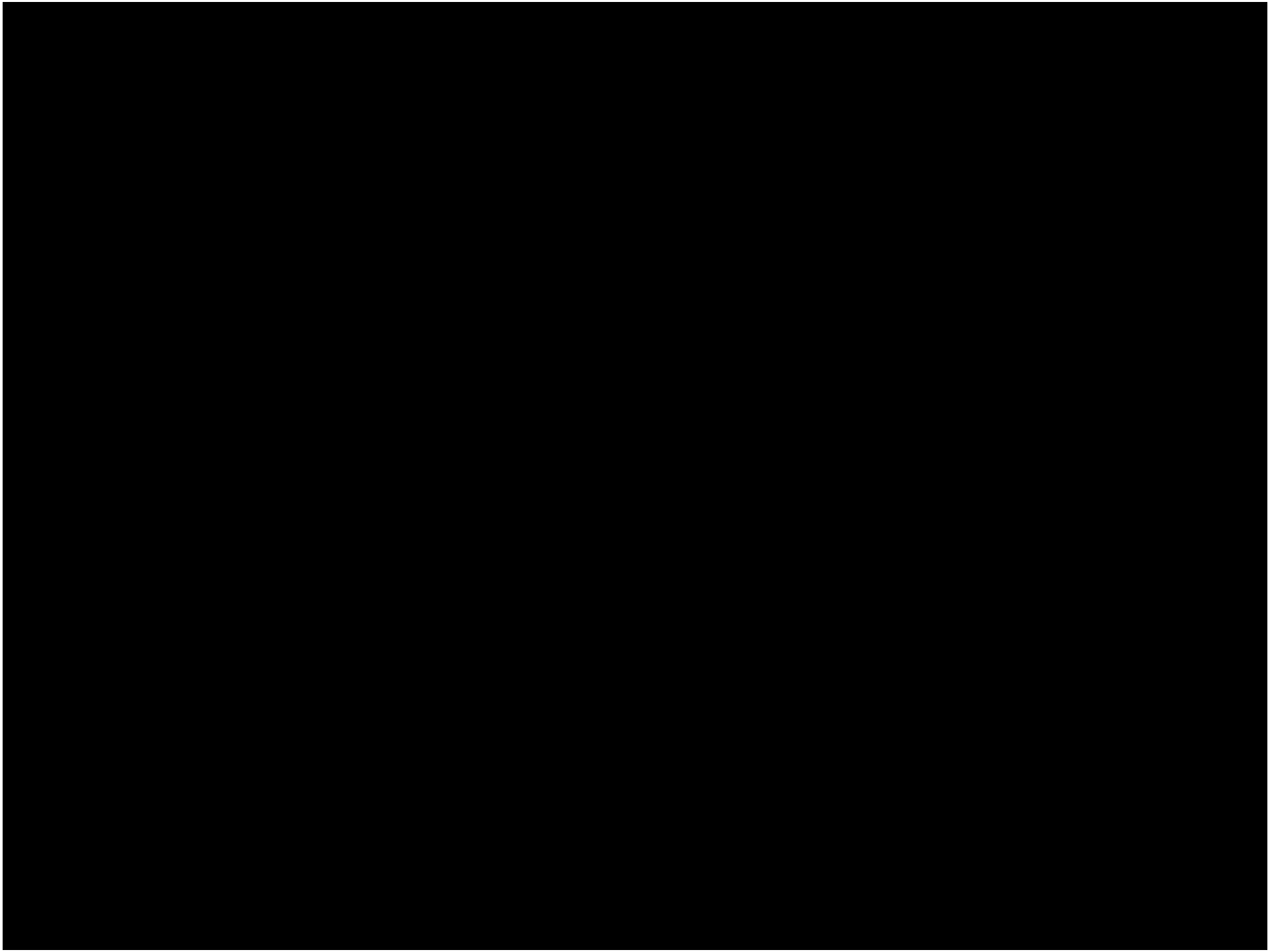
Minnesota Statewide Open Burning Reduction Campaign

- Goal to eliminate backyard garbage burning statewide by 2010
- 4-year campaign designed to educate local governments and officials about the dangers of burning and implement local programs
- Took educational presentation on the road Summer 2006
- Offered technical and grant assistance, funding projects in 30% of Minnesota counties
- Plan to continue local assistance efforts and focus on cabin owners and passing county no-burn resolutions in 2007/2008
- focus on education, infrastructure development, enforcement, and incentives but looking at changes to state law and enforcement efforts

Benefits of GLBTS Collaboration

- Openburning.org website central repository of information; allows for sharing between interested parties
- Conference calls and email updates help keep up-to-speed on efforts, resources, etc. and prevents “reinventing the wheel”
- Open burning case studies very useful
- Magnitude of problem revealed
- Surveys help craft reduction strategies
- Better handle on inventory due to BTS
- Improved understanding of issue for both grant coordinators and grant applicants

CLIMB Theatre clip placeholder



Mercury

Work Group Co-Chairs:

Alexis Cain, U.S. EPA

Edwina Lopes, Environment Canada

Canada's Mercury Reduction Challenge and Progress

Challenge:

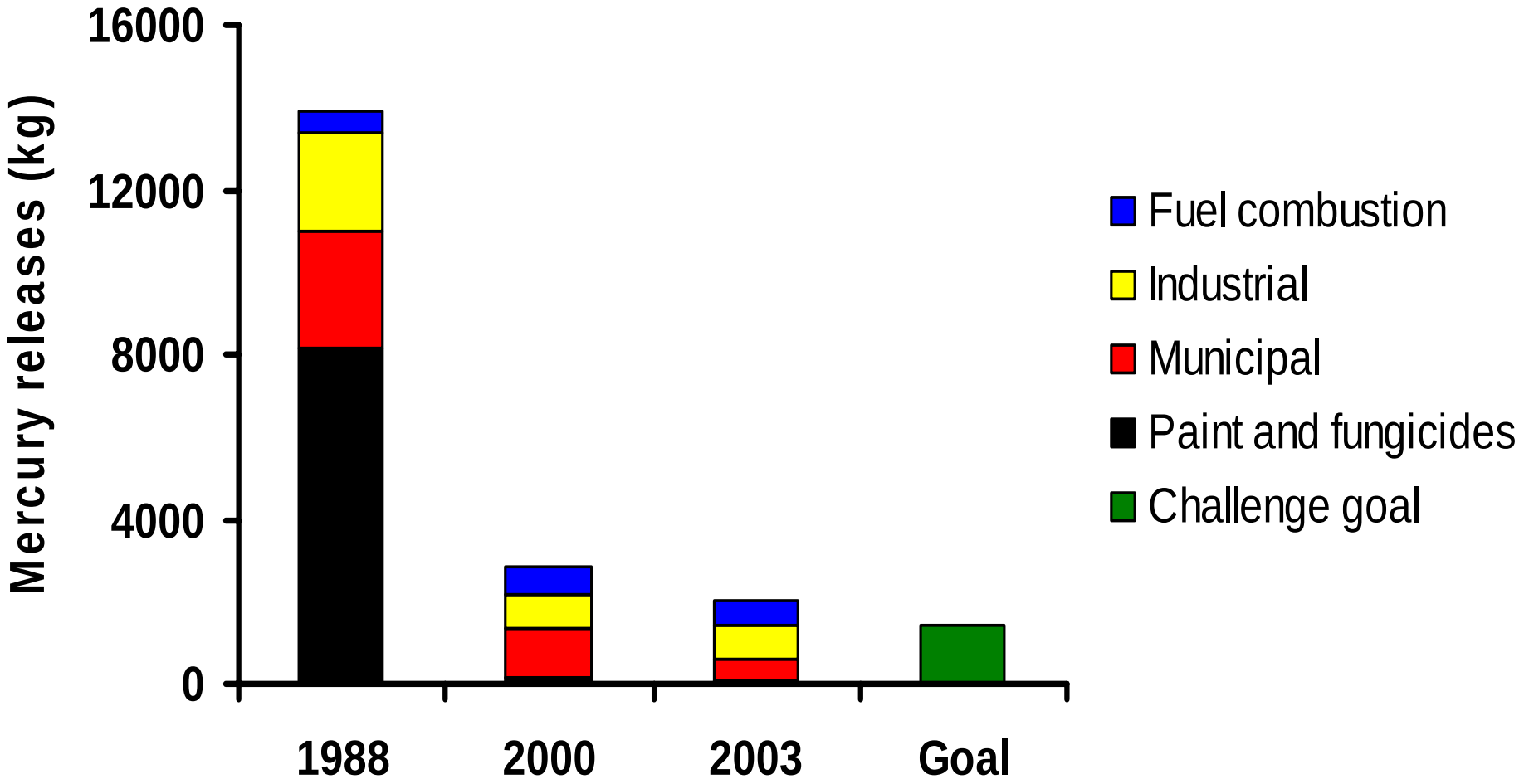
"Achieve by 2000, a 90% reduction in the release of mercury, or where warranted the use of mercury, in the Great Lakes Basin"

Baseline: 1988

Progress:

- **Approximately 85% reduction**

Ontario Mercury Releases



U.S. Mercury Reduction Challenge and Progress

Challenge:

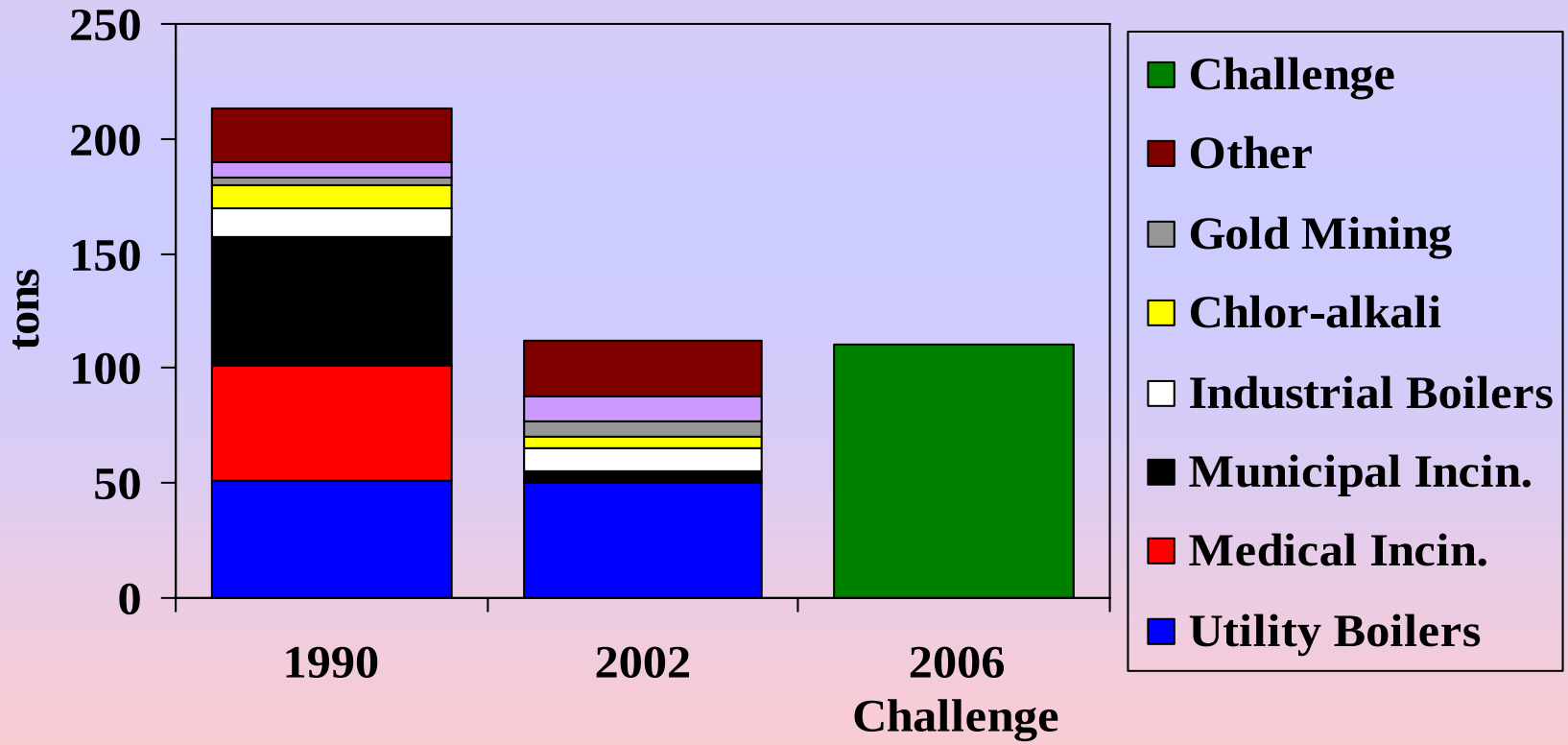
"Achieve by 2006 a 50% reduction in use and air emissions of mercury nationwide"

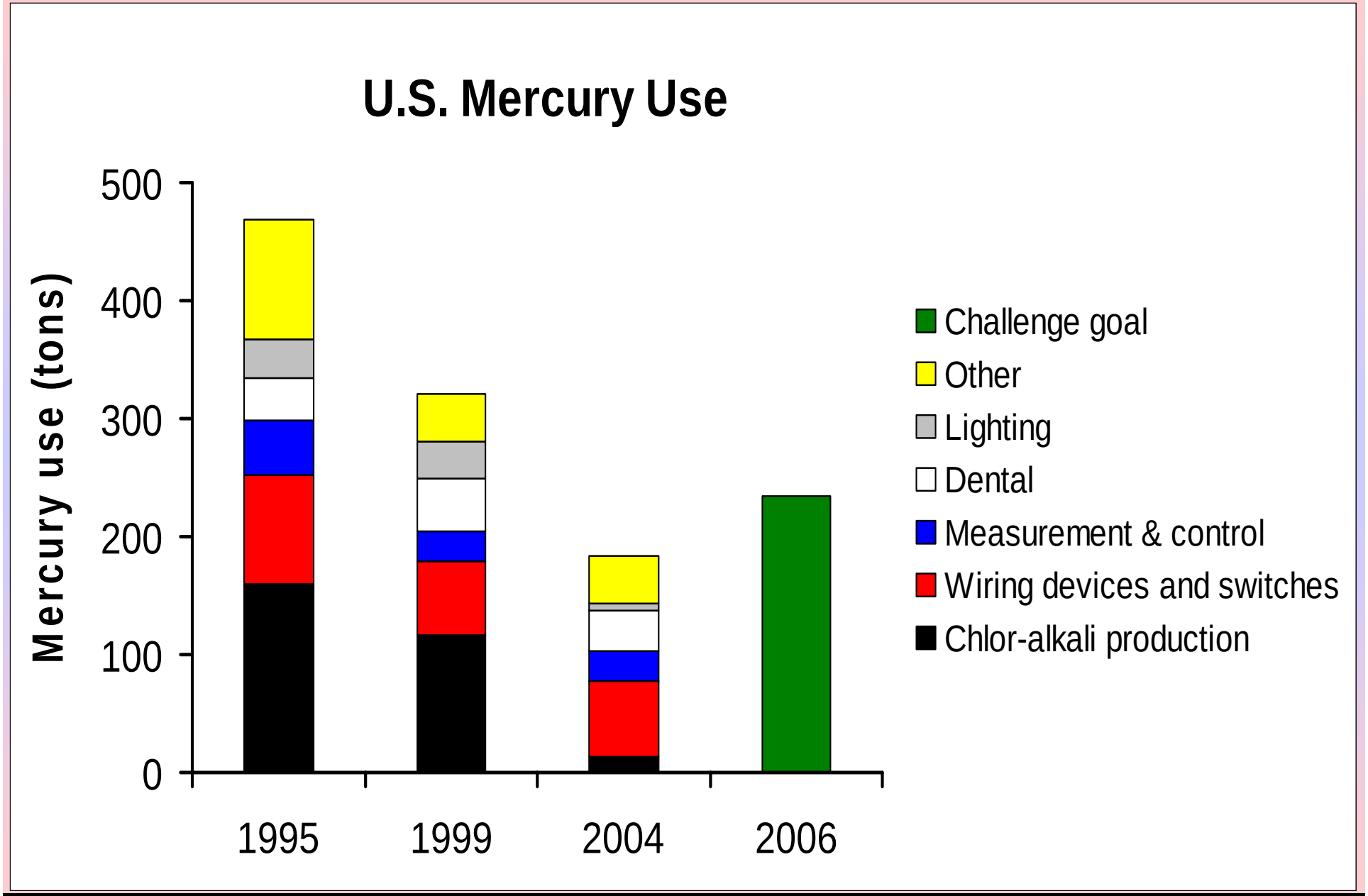
- **Baselines:**
  - **Emissions: 1990**
  - **Use: 1995**

Progress (best guess):

- **Emissions: > 50% reduction (as of 2002)**
- **Use: > 50% reduction**

US Mercury Emissions: 2006 Challenge, 1990 Baseline





Accomplishments

- Chlorine Institute
  - Committed to 50% reduction in chlor-alkali mercury use—achieved more than 90%
  - Submitted 9 annual reports
- Scrap Metal
  - Publicizing auto mercury switch issue
  - Industrial mercury use pilot--NW Indiana Steel Mills
- Hospitals—helped launch Hospitals for a Healthy Environment
- Dental—funded pilot projects; information-sharing meetings

Slide 77

GU1 Government User, 5/17/2007

Accomplishments

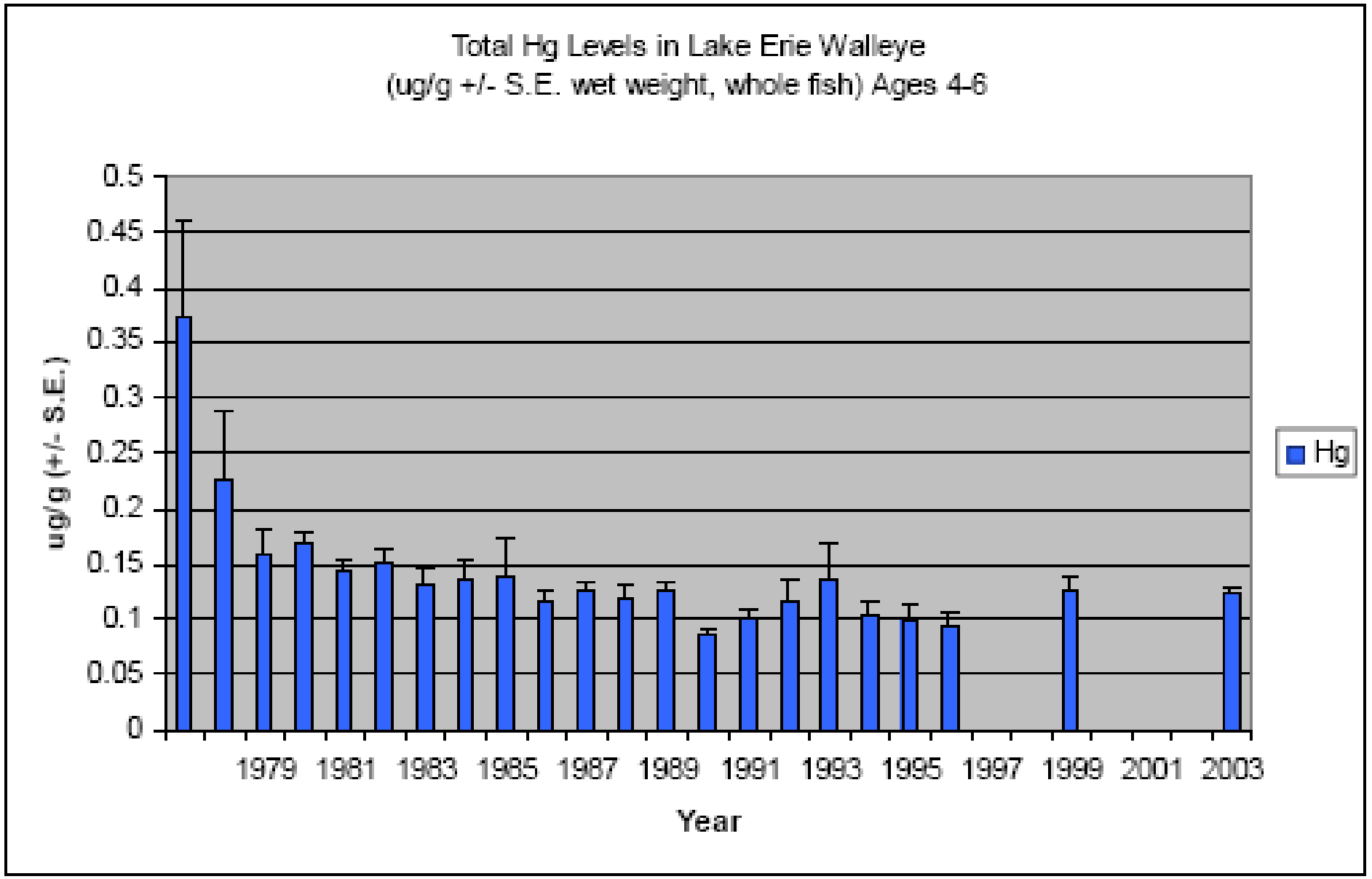
- U.S. Phase-down Strategy for Mercury in Products
  - Convened a state-tribal group to develop strategy for phasing mercury out of products and/or improve management of mercury product waste
  - Public Comment Period this Summer
  - Implementation group
- Environment Canada's proposed Risk Management Strategy for Mercury-containing products

Mercury Levels Compared with Environmental Criteria

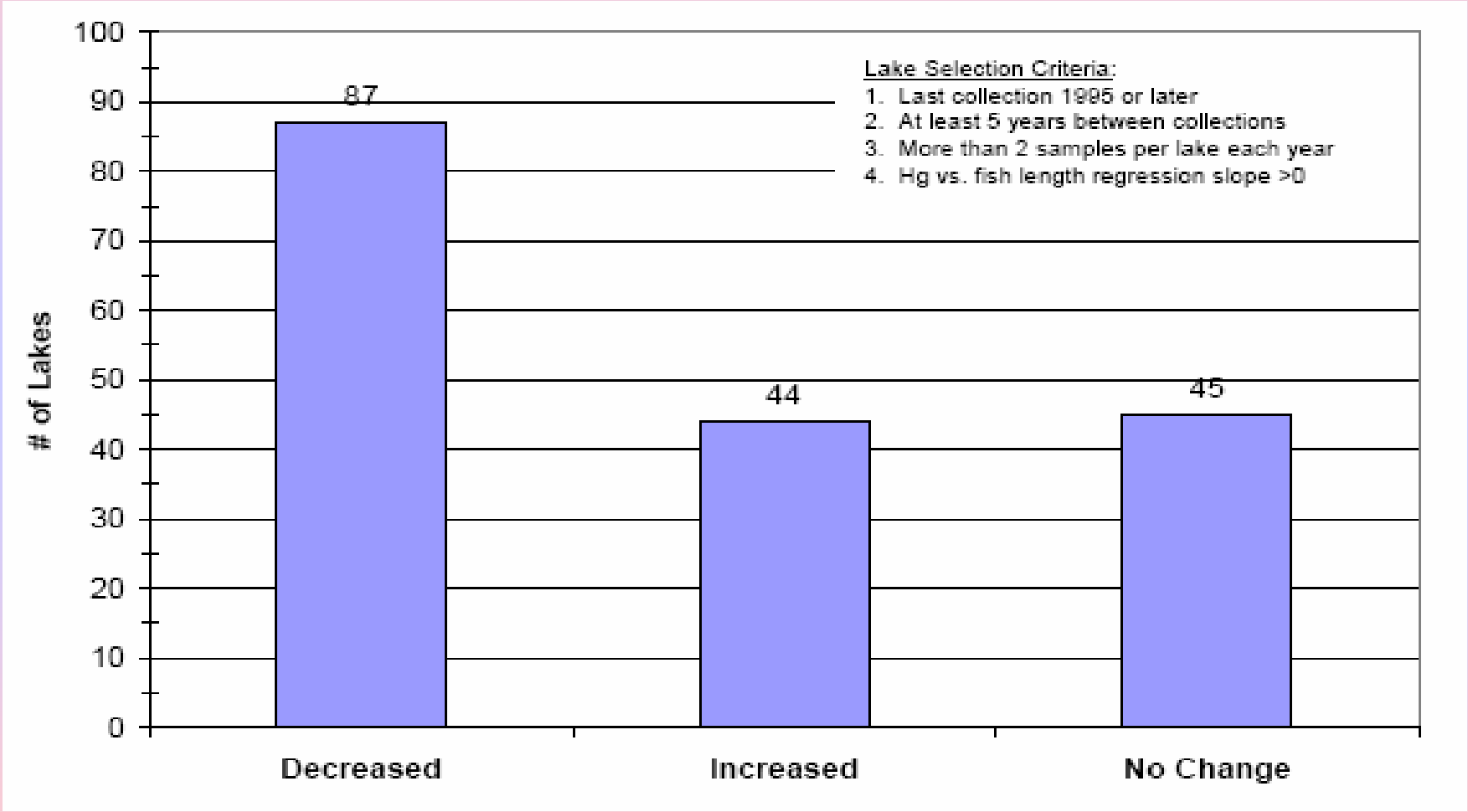
- Fish: Levels trigger fish consumption advice, especially in inland lakes and Lake Superior
- Sediment quality criteria: exceeded in many Areas of Concern
- Drinking water, ambient air meet environmental criteria

Mercury Trends in Environment

- Mercury levels in Great Lakes sediments have decreased significantly since peaking from the 1940s through the 1970s. Concentrations remain significantly elevated above pre-industrial levels
- More recent trends in mercury deposition are less clear; but . . .
- Biota:
  - Canadian DFO fish data and CWS herring gull egg data both indicate reductions in 1970s and 1980s, with more recent trend difficult to discern
  - Minnesota and Wisconsin studies indicate declining mercury concentrations in fish in inland lakes during 1990s



MPCA Comparison between Recent and Historical Fish Mercury Levels in 176 Minnesota Lakes



Next Steps

- Continued Workgroup Meetings and Progress Tracking– For How Long? How Frequently?
- Increased Attention to Global Mercury Releases
  - Support for UN Environment Program efforts
  - Encourage global action by industry based in North America
- Increased Focus on Tracking Environmental Changes

ENGO Contribution to BTS Mercury Reductions

John Jackson - Program Director

Great Lakes United

May 23, 2007

Hands On Activities:

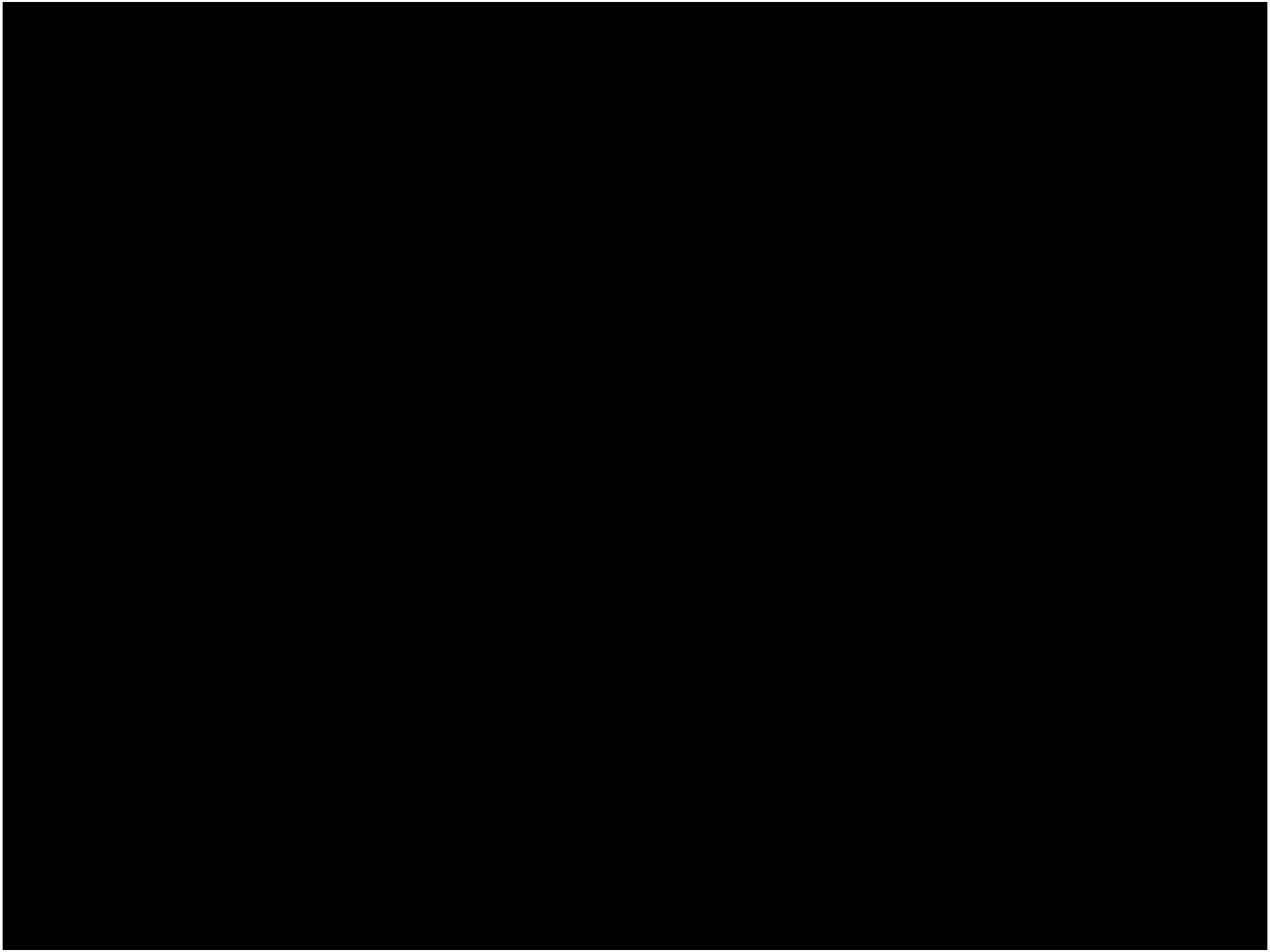
- NWF working with waste water treatment plants – especially Detroit – to address upstream sources of mercury
- Several groups, e.g., Toronto Environmental Alliance, Ecology Center, NWF, Canadian Physicians for the Environment, Pollution Probe and GLU, on P2 in hospitals to get them to stop using mercury-containing medical devises and to close down hospital incinerators

- **Ecology Center, Clean Production Action and Great Lakes United working on issues regarding mercury in automobile switches:**
  - **o Report on Toxic Releases from end-of-life vehicles**
  - **o Trainings on mercury switch removal**
  - **o Formation of Partnership for Mercury-Free Vehicles**
    - **Model legislation**
  - **o Get the Mercury Out web conference**

- **Helping stimulate the reduction or elimination of specific individual point sources of mercury releases to the basin, e.g., White Pine copper smelter**

Policy Level Activities

- Extended Producer Responsibility, including holding workshops on the topic in Toronto and Buffalo
- NWF work on emissions inventories to address the weaknesses in them
- Pushing for strong legislation and regulations under systems such as Canada-Wide Standards and U.S. MAC standards



Benzo(a)Pyrene and Hexachlorobenzene 1997-2007

Work Group Co-Chairs:
Steve Rosenthal, U.S. EPA
Tom Tseng, Environment Canada

May 23, 2007

B(a)P and HCB Challenge Goals

Canada

- Seek a 90% reduction in releases
- By 2000

United States

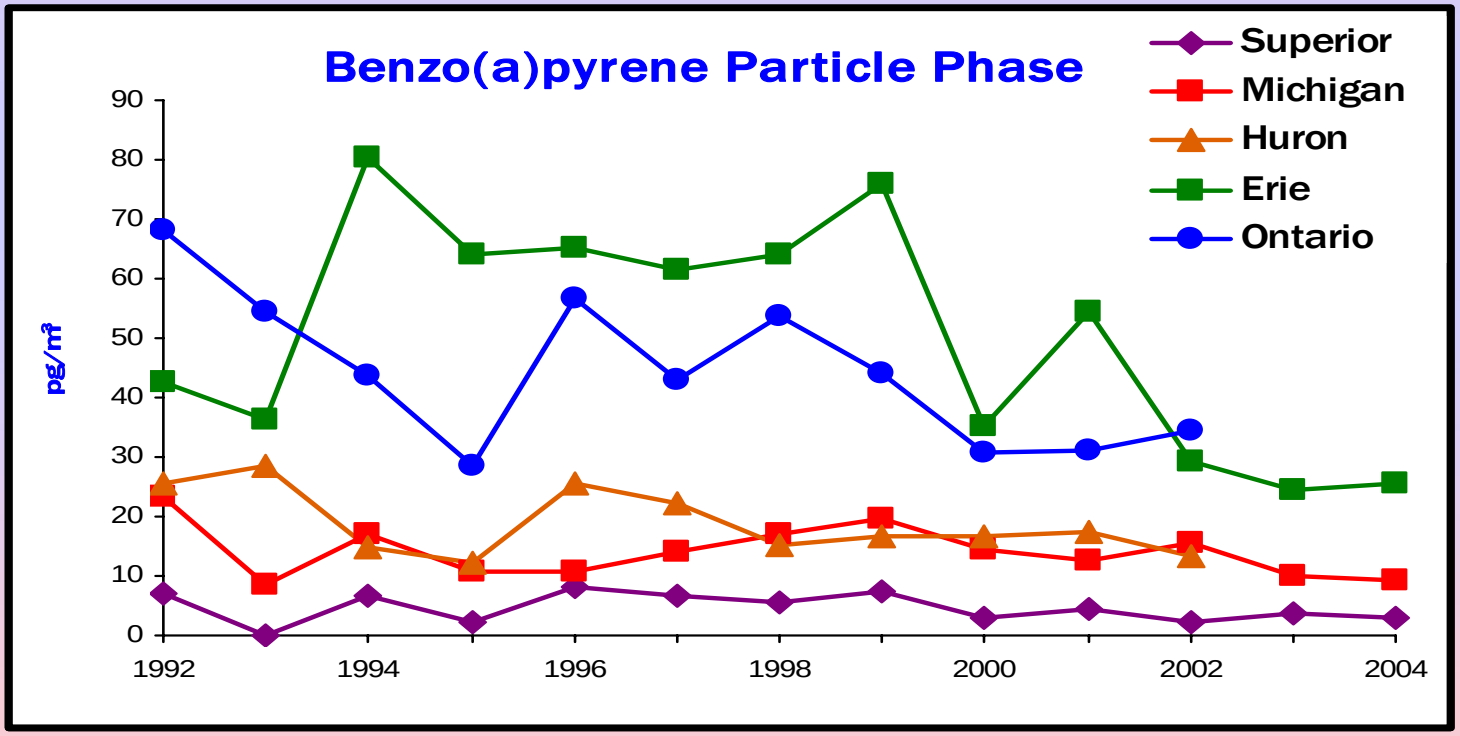
- Seek reductions in releases that are within, or have the potential to enter, the Great Lakes Basin
- By 2006

Progress Toward the Challenge Goals

- The U.S. has met its commitments
  - B(a)P emissions in Great Lakes states reduced by ~77% from 1996 to 2001
  - HCB emissions reduced from 1990 to 1999, and further by 2002 (28% reduction from 1999-2002)
- It is unlikely Canada will be able to meet the 90% reduction target by 2007
  - B(a)P releases reduced by ~52%, relative to 1988
  - HCB releases reduced by ~73%, relative to 1988

B(a)P Air Monitoring in Great Lakes Basin – IADN Data

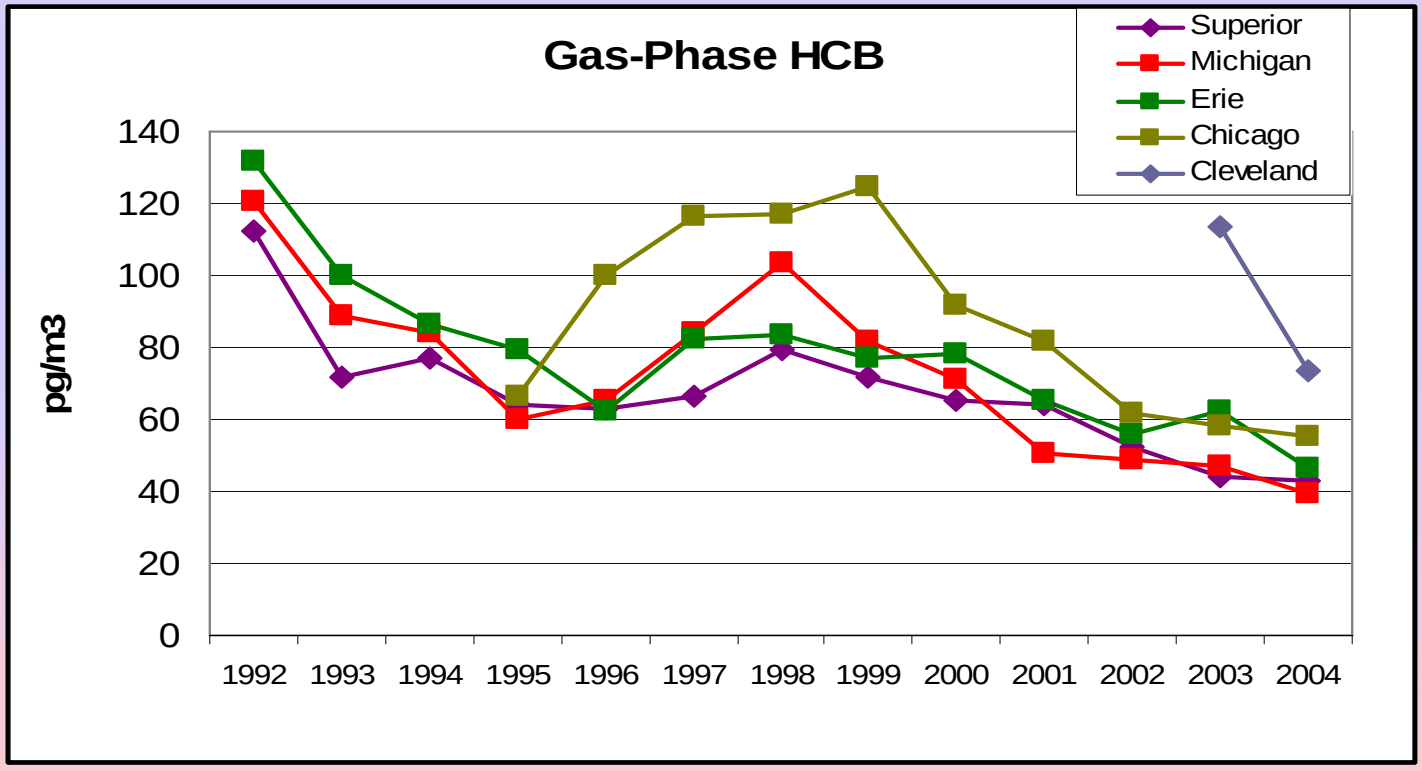
Long-term trend is a decrease, but little change recently. B(a)P levels in winter are about twice as high as in the summer



Source: Melissa Hulting, IADN data, USEPA 2006

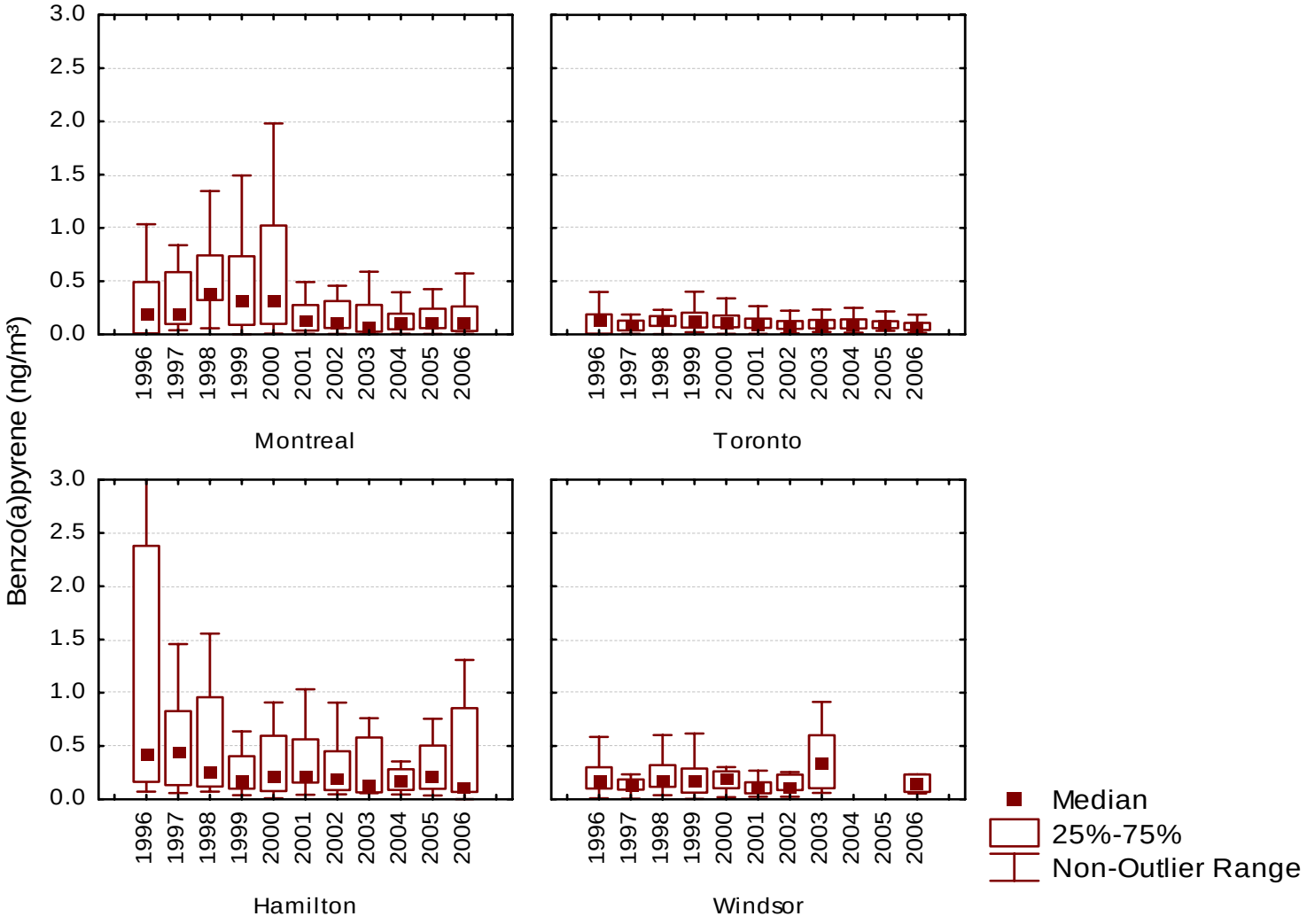
HCB Air Monitoring in Great Lakes Basin – IADN Data

HCB continues to decrease after increase in the late 90s; higher levels seen in Cleveland, Ohio.

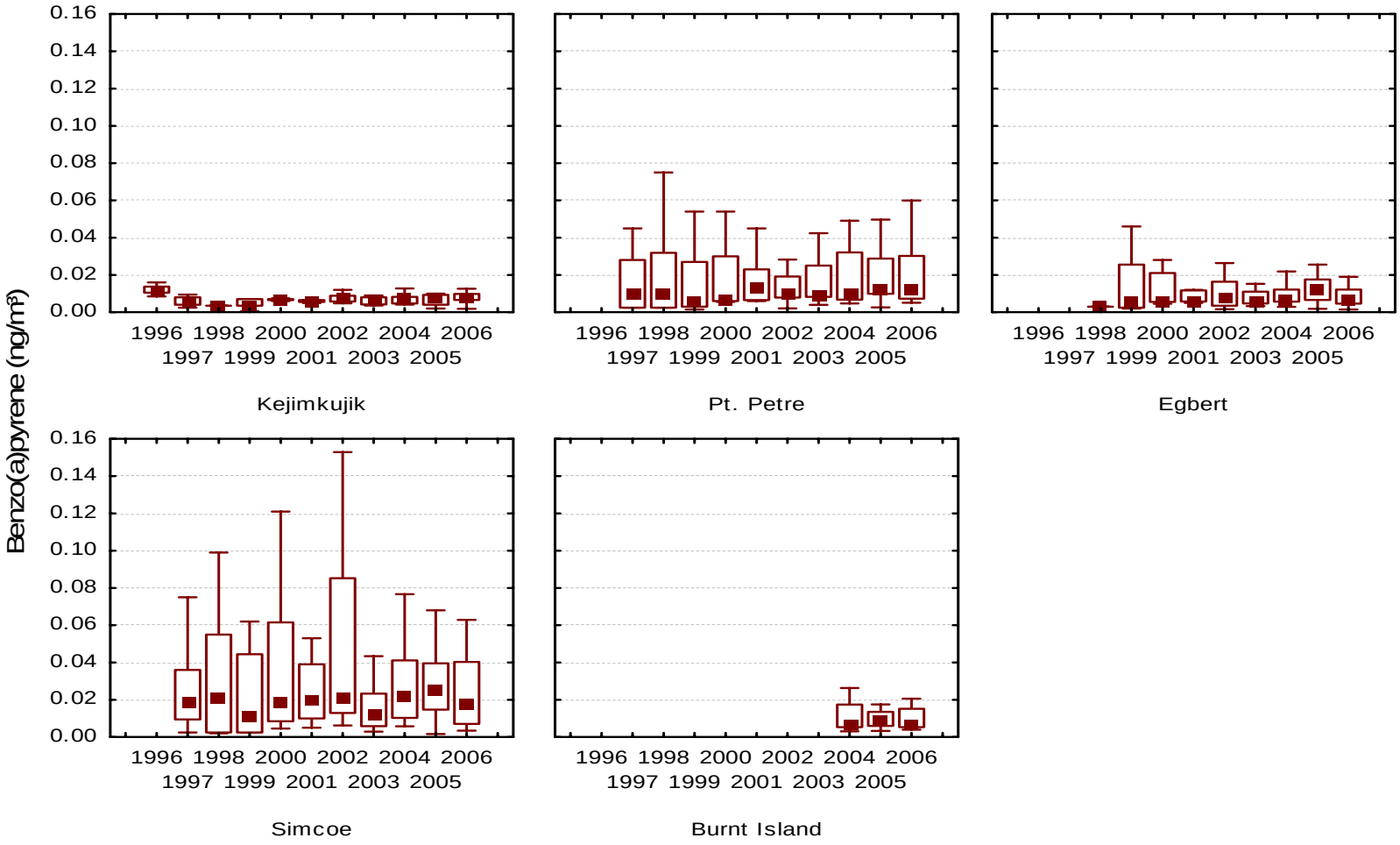


Source: Melissa Hulting, IADN data, USEPA 2006

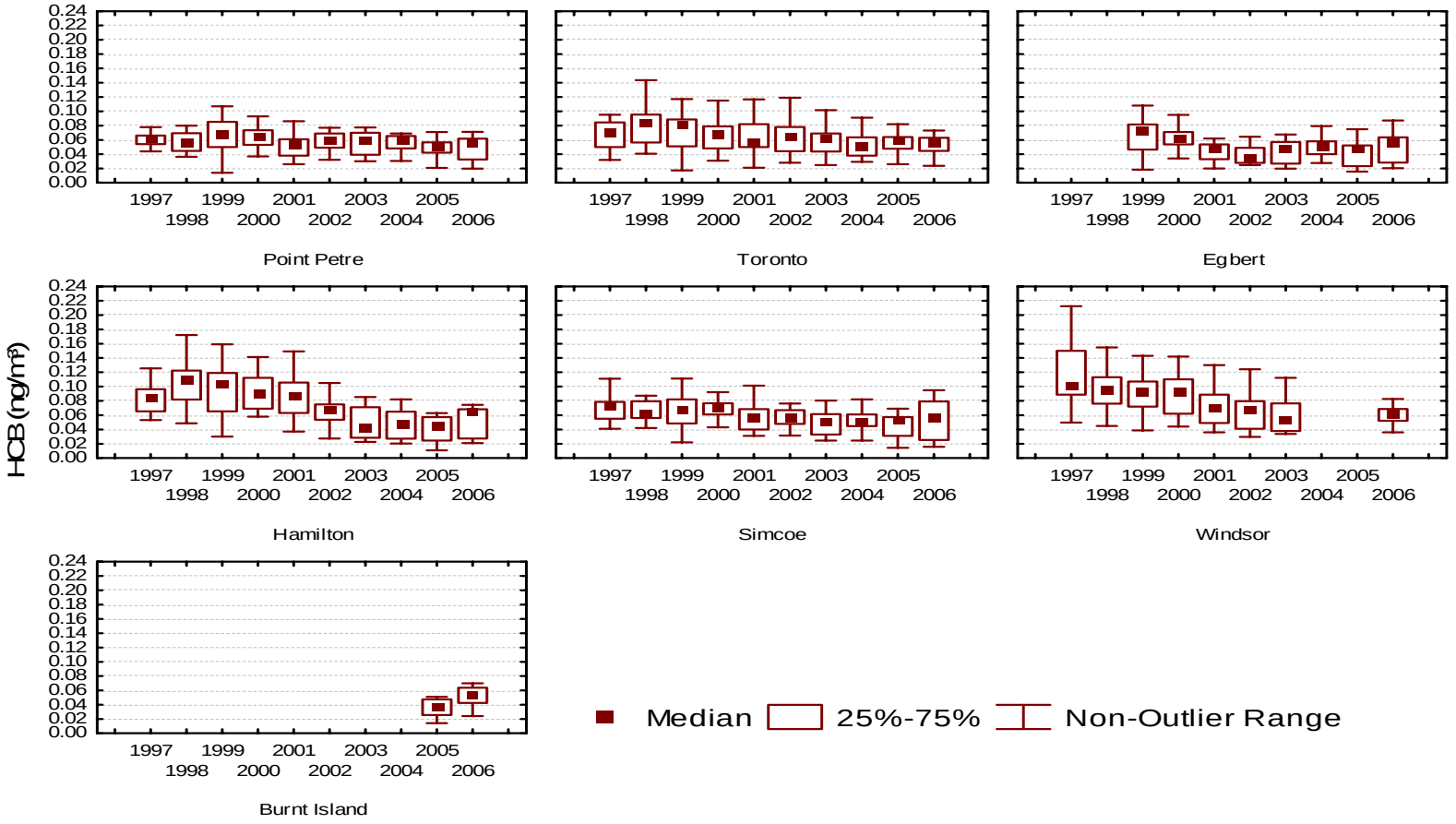
B(a)P Air Monitoring in Great Lakes Basin – NAPS Data



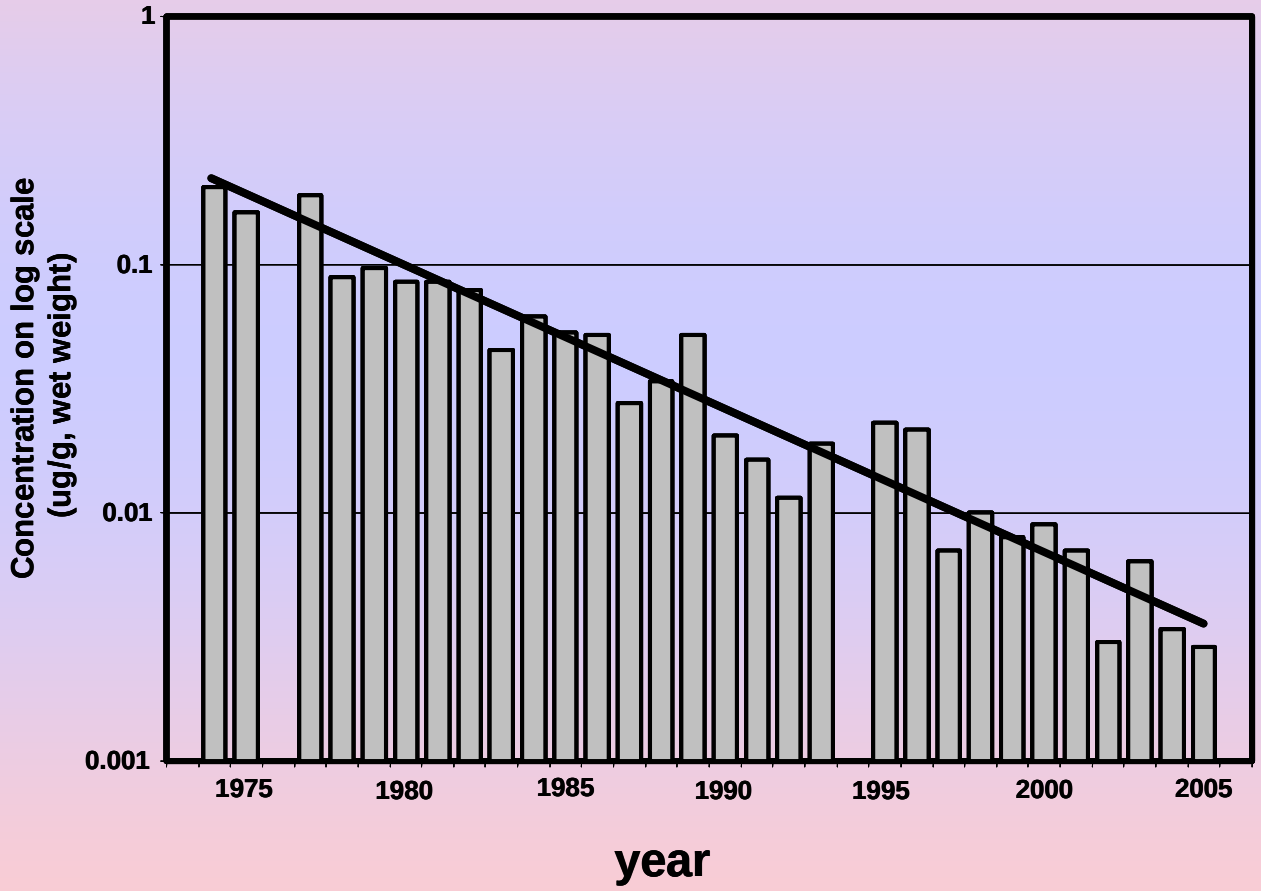
B(a)P Air Monitoring in Great Lakes Basin – NAPS Data



HCB Air Monitoring in Great Lakes Basin – NAPS Data

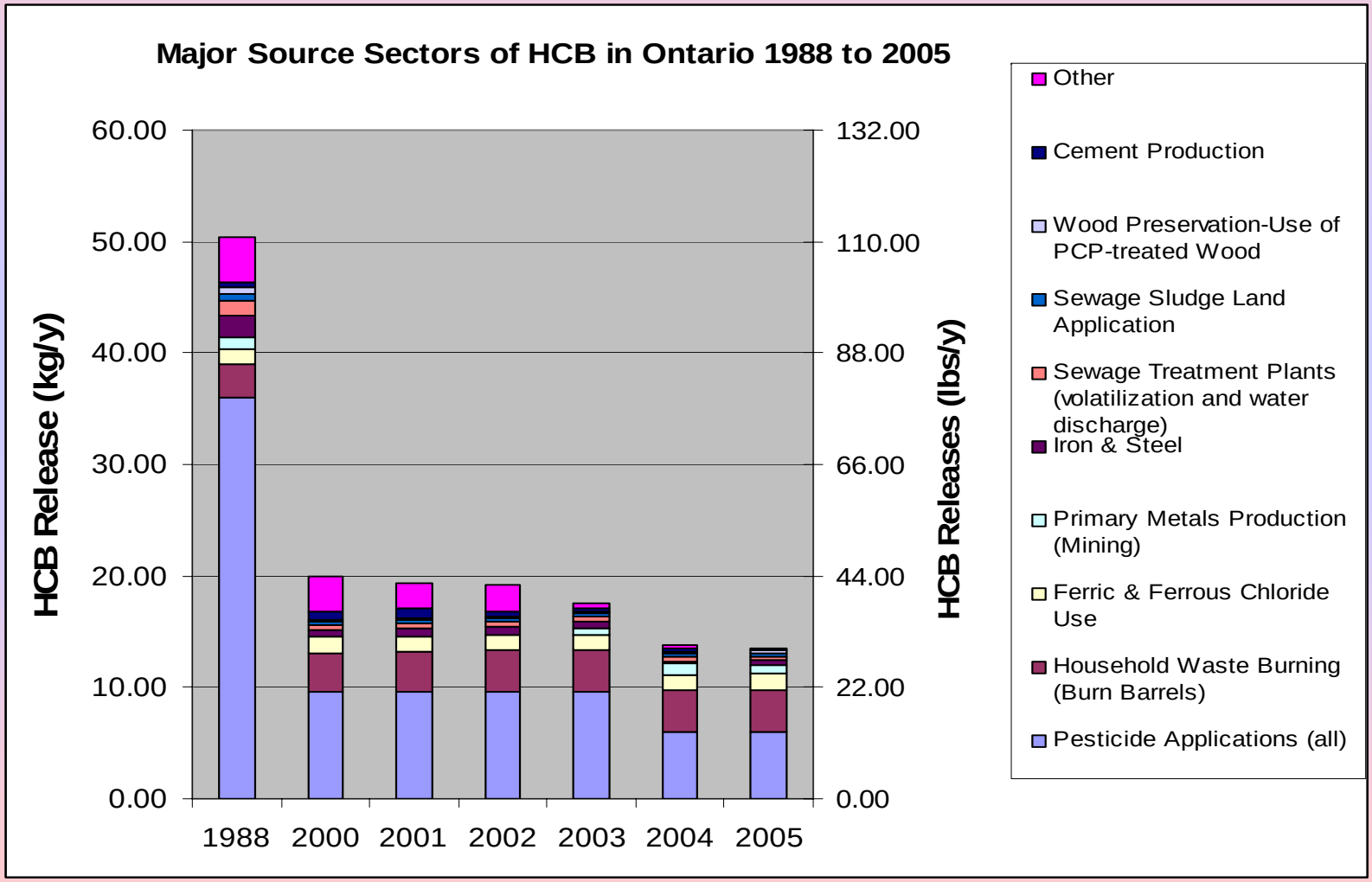


HCB in Herring Gull Eggs, Port Colborne Lighthouse, Lake Erie, 1974-2005



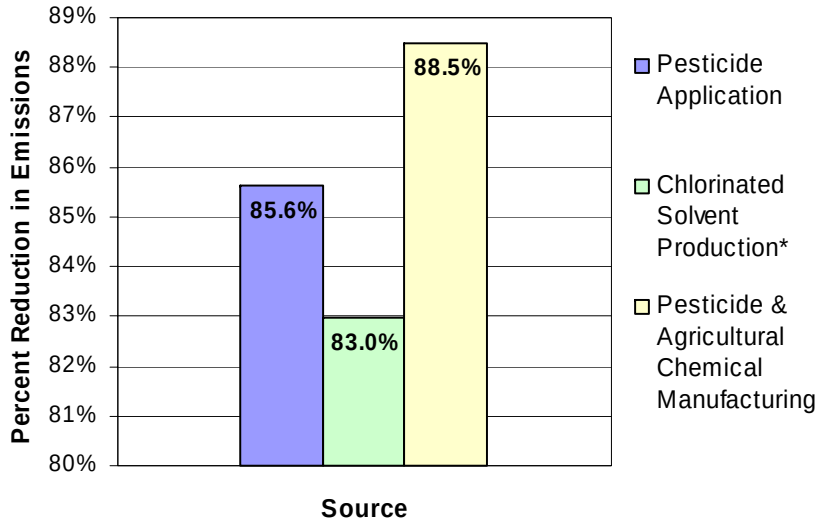
HCB Sources - Canada

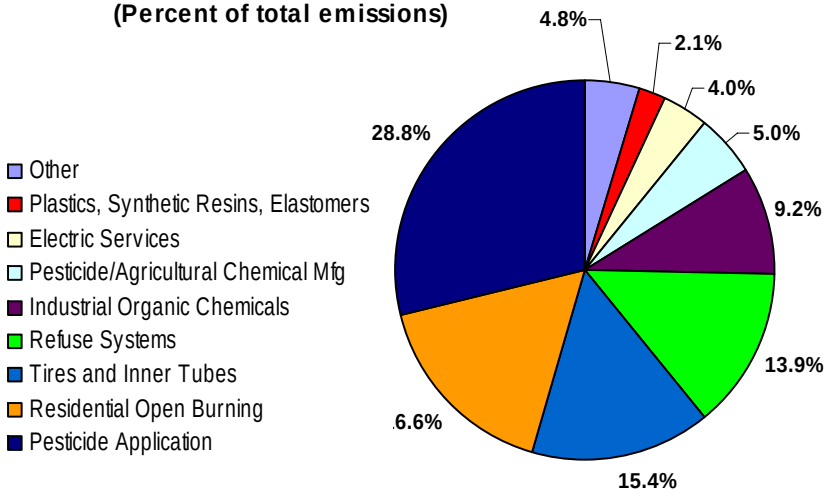
Ontario HCB Sources 2005, Ontario total 14 kg (30 lbs)



HCB Sources - US

US HCB Sources 2002, US total ~950 kg (2,100 lbs)





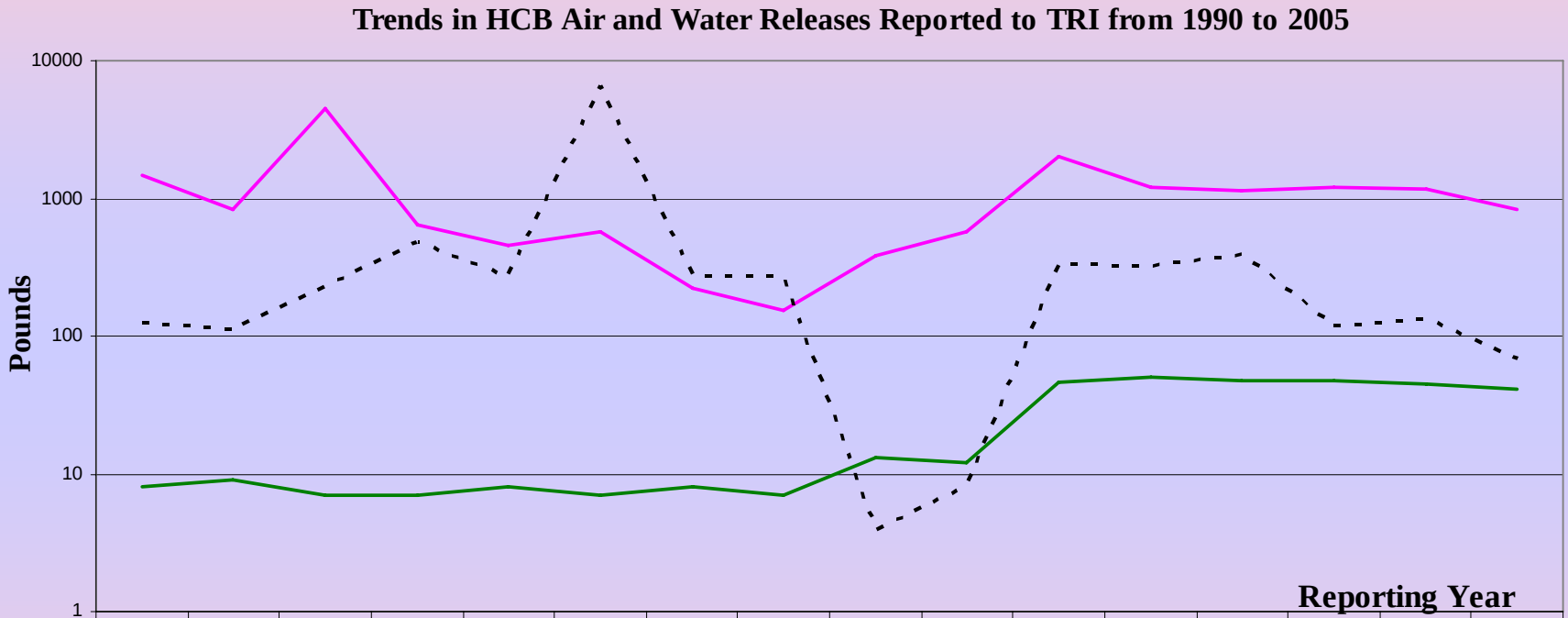
* This (1990) source category was not reported in USEPA's 2002 National Emissions Inventory. The sum of 2002 HCB emissions from Industrial Organic Chemical and Industrial Inorganic Chemical manufacturing comprises the 2002 total for this category.

Sources: EPA 1990 National Toxics Inventory, adjusted to reflect residential open burning emissions, and 2002 National Emissions Inventory data

Source: 2002 National Emissions Inventory

HCB Sources- US TRI Data

US total 2005 emissions: ~382 kg (842 lbs) to air, ~31 kg (69 lbs) to water

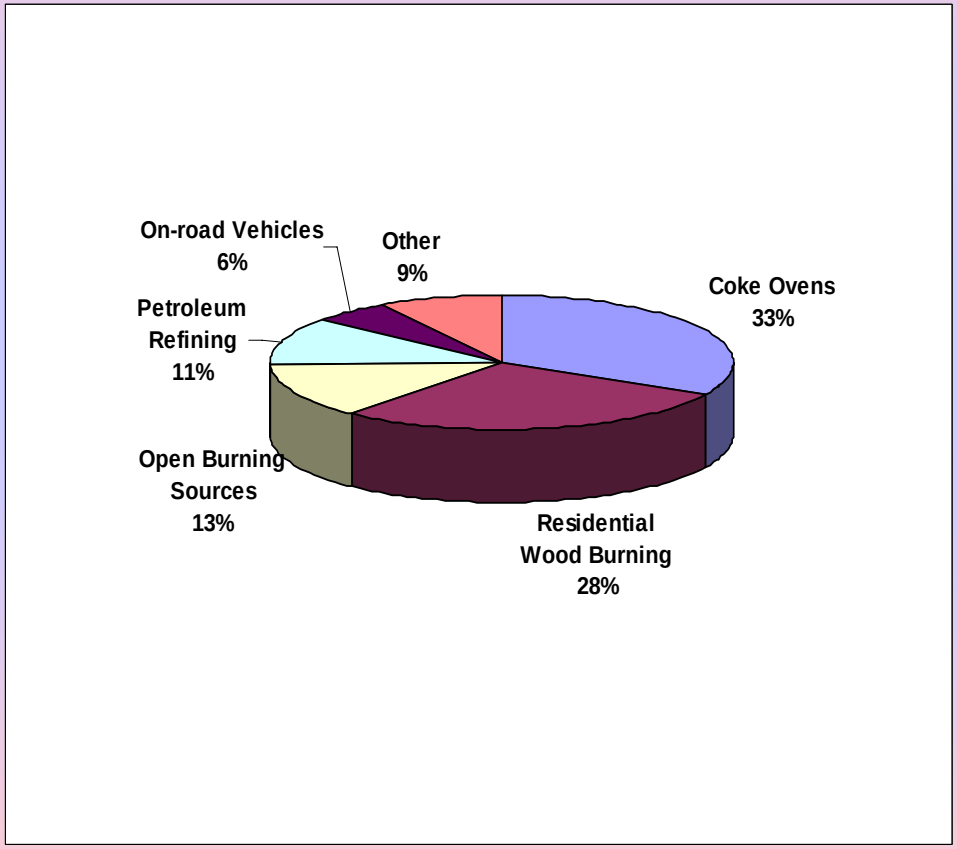


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Air	1468	841	4471	636	458	566	220	154	386	571	1994	1199	1138	1197	1169	842
Water	124	111	227	476	269	6458	274	276	4	8	331	322	397	120	133	69
Facilities	8	9	7	7	8	7	8	7	13	12	46	50	47	48	45	41

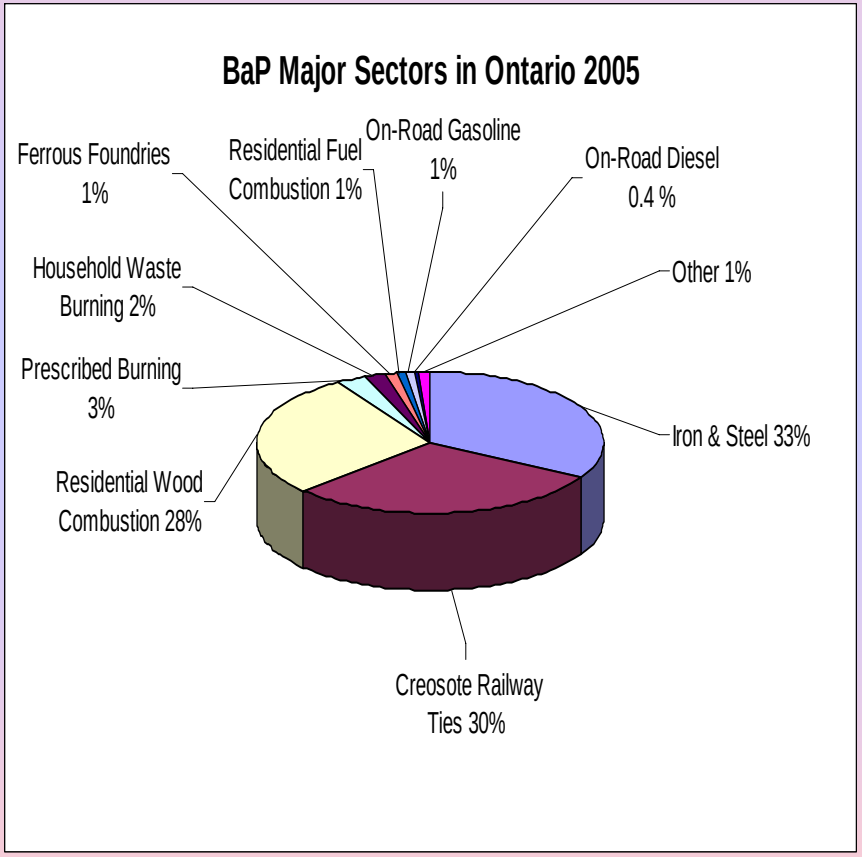
NOTES: In 2000, the TRI reporting threshold for HCB changed from 100 lbs to 10 lbs and the number of facilities reporting HCB to TRI increased. The peak in air emissions for 1992 is due to a release of 3,800 lbs. by Dow Chemical Co., Freeport, TX. The peak in water releases for 1995 is due to a release of 6,300 lbs. by the same facility. The increase in air emissions for 2000 is largely due to a release of 808 lbs. by Ash Grove Cement of Utah. Finally, some facilities have submitted corrections to previous TRI reports based on improved sampling methods. The graph includes revised estimates that have been updated in the TRI database. For example, a correction was made for the 2000 data, reducing the total air releases previously reported (2234 lbs) to 1994 lbs.

B(a)P Sources – Great Lakes Region

2002 Great Lakes Basin Regional B(a)P Emissions
26,858 kg (59,087 lbs)



2005 Ontario B(a)P Sources
8,340 kg (18,348 lbs)



Significant B(a)P/HCB Activities

Reducing Emissions from Coke Production in Iron & Steel Sector

- From 1988 to 2005, PAHs emissions reduced by 73% from four integrated mills in Ontario
- Ontario coke producers met PAH reduction targets (as of 2006) set out in the Code of Practice from the federal and provincial government
- Due to a number of closures, approximately 17 coke batteries remained in operation in the Great Lakes area in 2006.
- A series of MACT rules in the US have reduced emissions from charging, doors, lids, offtake systems, collecting mains, pushing, quenching, and combustion stacks.

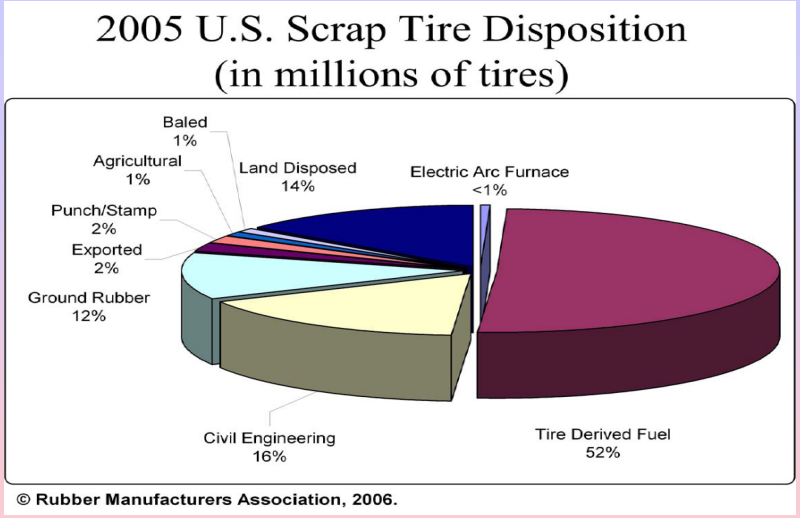
Significant B(a)P/HCB Activities

Reducing Emissions from Scrap Tire Fires

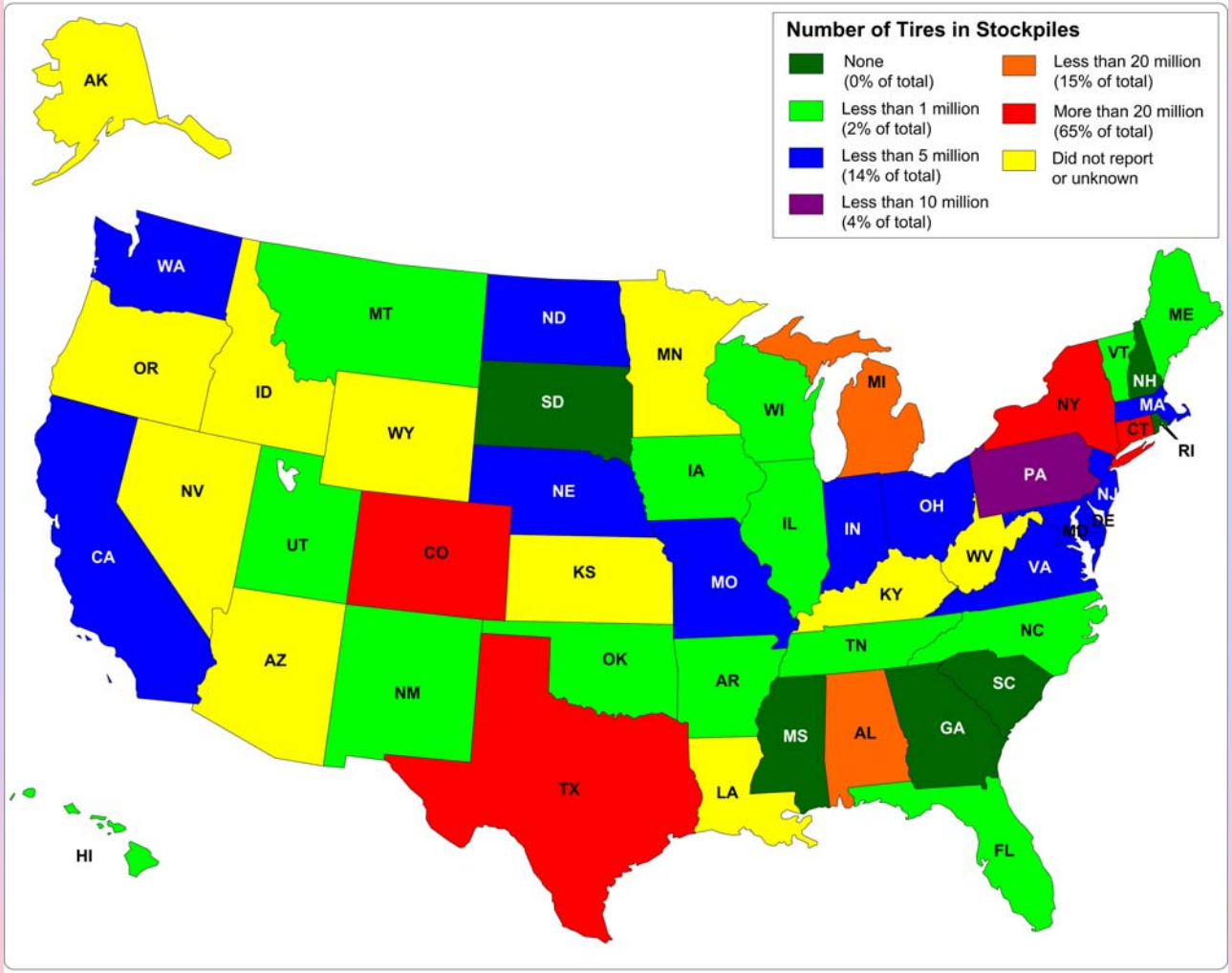
- Progress has been made since 1990 in US scrap tire management.

- USEPA developed a scrap tire cleanup guidebook and held a series of public education programs to help better manage scrap tire piles.

- Ontario *Scrap Tire Diversion Program* proposed but deferred beyond the immediate future.



Scrap Tires Remaining in Stockpiles in the U.S., 2005



Significant B(a)P/HCB Activities

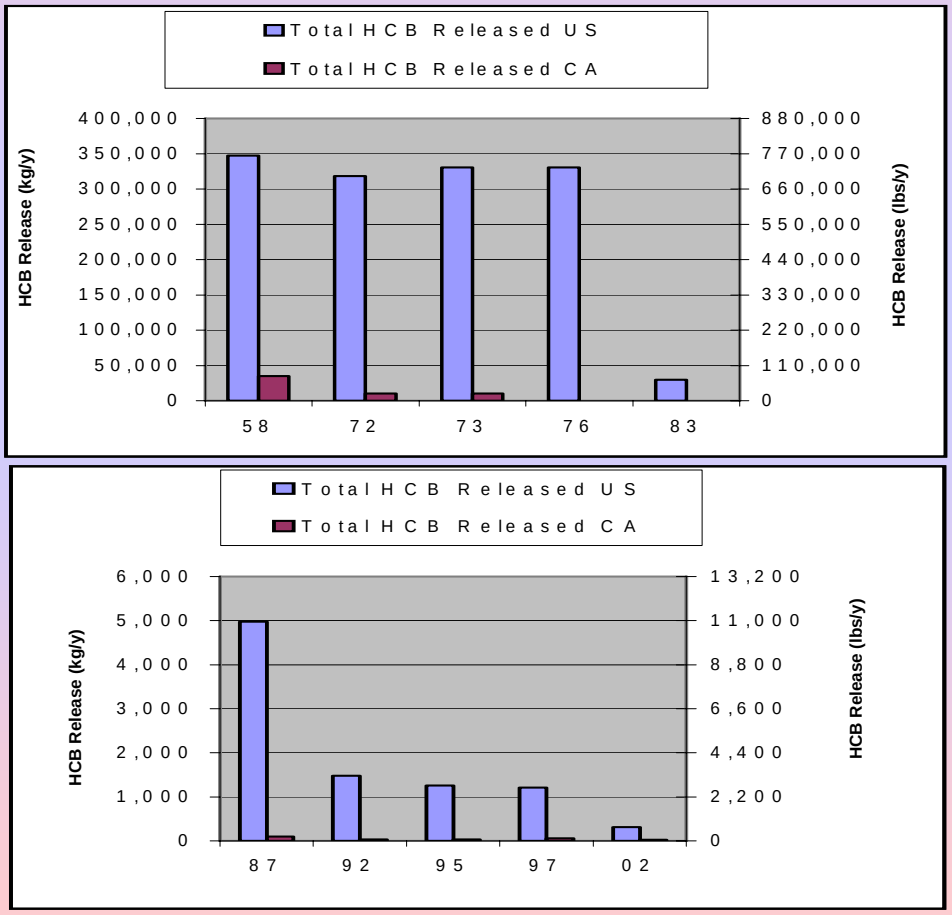
Reducing Emissions from Diesel Vehicles

- Recent USEPA PAH source apportionment study shows that Diesel Vehicles in Chicago are a potential significant source of PAHs
- MidWest Clean Diesel Initiative is being implemented in Midwest (US EPA Region 5).
  - The initiative reduces diesel emissions (PM, VOC, NOx, HAPs) through retrofitting, idling reduction, refuel, repowering, and replacing diesel engines in the Midwest.
  - The initiative has impacted 353,560 diesel engines as of March 2007. The goal is to reduce emissions from one million diesel engines by 2010.
- Ontario Drive Clean Program reduces Smog Precursors (NOx, NMHC, and PM).
- Canadian Vehicle and Engine Emission Regulation and Fuel Regulations help further reduce NOx, PM, NMHC, CO, and formaldehyde.

Significant B(a)P/HCB Activities

Reducing Emissions from Pesticide Applications

HCB released from all pesticide use in U.S. and Canada, 1958-2002 (Source: EPOD-ON preliminary data)



Declining HCB concentrations in pesticide Technical Grade Active Ingredients

[HCB] in Pesticide (ppm)	1988	1995	2006
	Benazon 2000	Bailey 2001	PMRA 2007
Atrazine	2.5	1	0.1 - 2.5
Chlorothalonil	300	40	3 - 58
Quintozene	500	500	200 - 800
Dacthal	1000	1000	11 - 25
Chlopyralid	2.5	2.5	0 - 16
Pichloram	100	50	1 - 33
Endosulfan	0.1	0.1	< 0.1
Pentachlorophenol	50	50	40 - 75
Simazine	2.5	1	0.1 – 2.5

Outlook – United States

- US meeting its commitments for B(a)P and HCB
- Planned HCB activities:
  - Review results of new HCB Inventory Study
  - Continue soliciting voluntary chemical company reductions
- Planned B(a)P activities:
  - Follow-up on implementation of EPA's scrap tire guidance
  - Future wood stove changeouts planned
  - Additional Tribal burning workshops scheduled
  - Implementation of voluntary wood-fired boiler agreements
  - Follow-up on newly identified source categories in Great Lakes B(a)P inventory

Outlook - Canada

Future B(a)P Activities:

- **Iron & Steel :** Promote further reductions beyond Canadian Environmental Code of Practice for integrated steel mills
- **Creosote Treated Wood:** Implement Users Guidance Document and Working with Wood Preservation Canada to survey creosote wood usage and disposal options
- **Resiential Wood Combustion:** EC continues to support the initiative, but support from NRCan ends. Funding reduced substantially.

Future HCB Activities:

- **Pesticides:** Promote actions to further reduce concentrations of HCB in pesticides, optimize/reduce usage of pesticides containing HCB, and/or promote alternatives to pesticides containing HCB
- **Open Burning of Garbage:** Update residential waste generation data
- **Ferric/Ferrous Chloride :** Update information on HCB in sewage sludge to modify release information (from current Ontario Ministry of the Environment study)

Level 1 Reassessment Conclusions

B(a)P:

- Continued active Level 1 status
- Continue to explore opportunities for further reduction
- Gather information to improve B(a)P inventory
- Expand focus to a larger group of PAHs

HCB:

- Continued active Level 1 status
- Resolve HCB inventory discrepancies
- Identify the impact of long-range transport
- Coordinate with international programs
- Continue to explore opportunities for further reduction
- Expand the workgroup to include chlorobenzenes

Significant B(a)P/HCB Activities

Reducing Emissions from Residential Wood Combustion

From 1997 to 2007,

- Over 9,000 Canadians and 250 Americans participated in the "Burn it Smart" Program.

- Many old wood stoves replaced with newer ones and a change-out program implemented in some US Great Lakes States

- Artificial Wax firelog testing completed and indicates very low emissions produced

- US has taken a non-regulatory approach to managing outdoor wood-fired boilers

An EPA Woodstove

"Burn It Smart" workshop

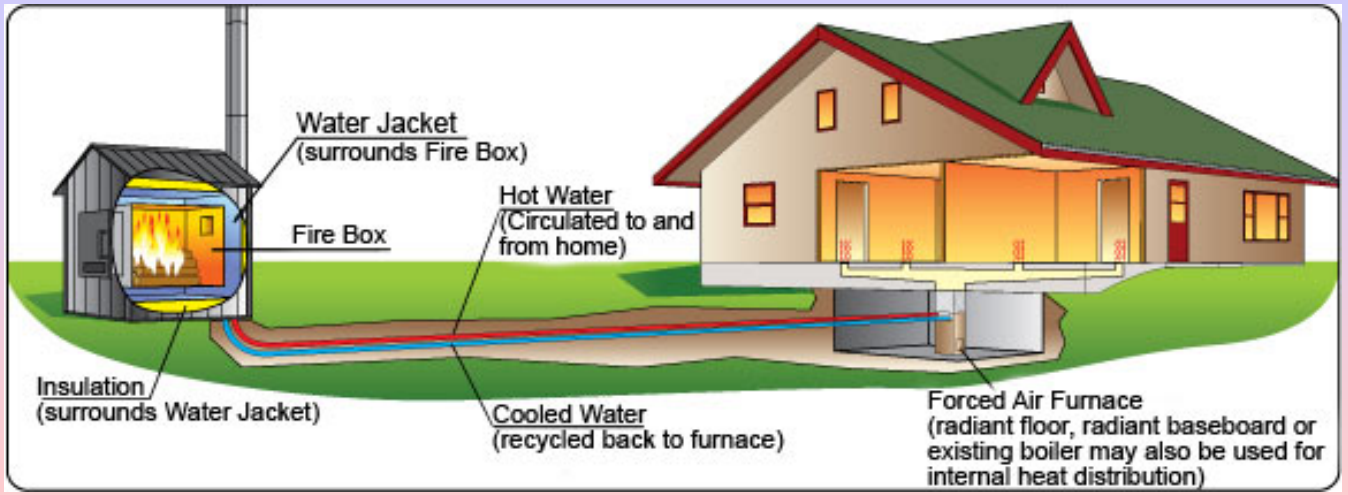
Burn it Smart!
A Multi-Agency Strategy for Canada

- ***Natural Resources Canada***
  September 26, 2002
- **REGIONS JOIN CAMPAIGN TO PROMOTE "SMARTER" WOOD BURNING**
- **OTTAWA — The Government of Canada is encouraging Canadians who use wood for heating to "Burn it Smart." The Honourable Herb Dhaliwal, Minister of Natural Resources Canada (NRCan), announced today that more than 25 communities across the country have committed to practising safer, cleaner and more efficient wood-heating habits.**

Environment Canada, Local Lung Associations Provincial Air Agencies

Outdoor Wood-fired Hydronic Heater Program

- Phase I Partnership Agreement is a result of more than two years of collaboration between EPA, HPBA and other stakeholders.
- New partnership effort, combined with proper installation and best burn practices, will provide consumers with cleaner heating appliances.
- The cleaner OWHHs will meet EPA's Phase I air emissions level of 0.60 pounds of fine particles per million btu heat input



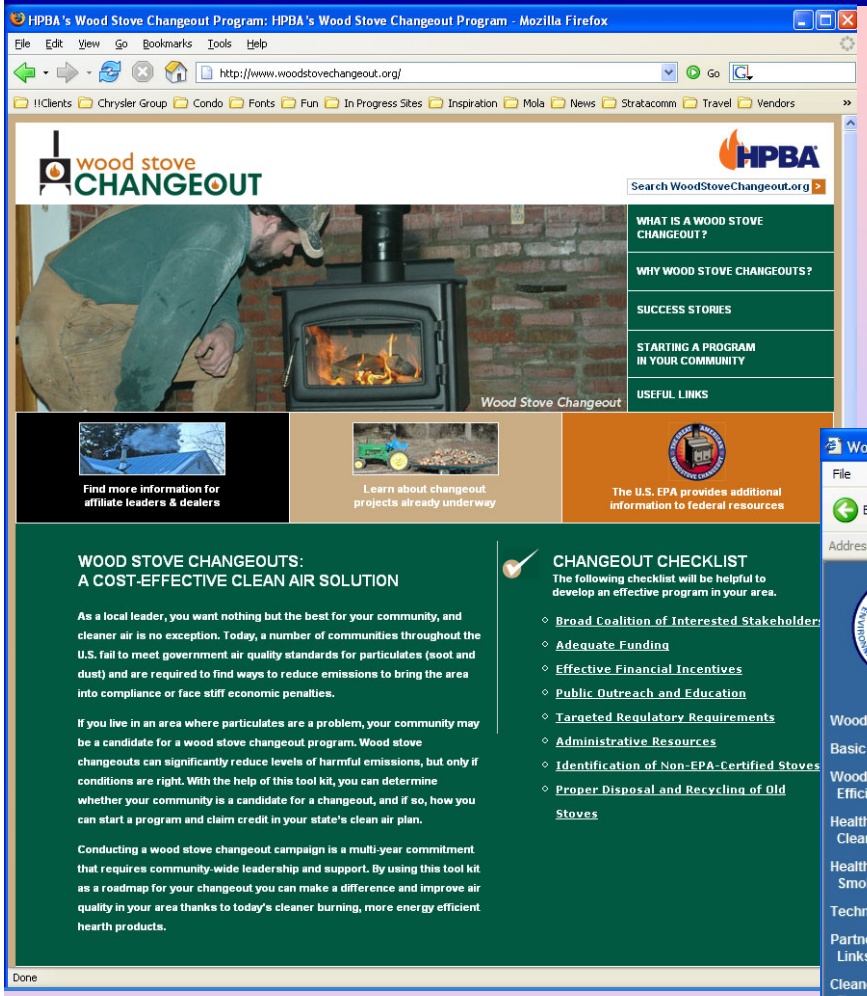
US EPA Woodsmoke Website

http://www.epa.gov/woodstoves/

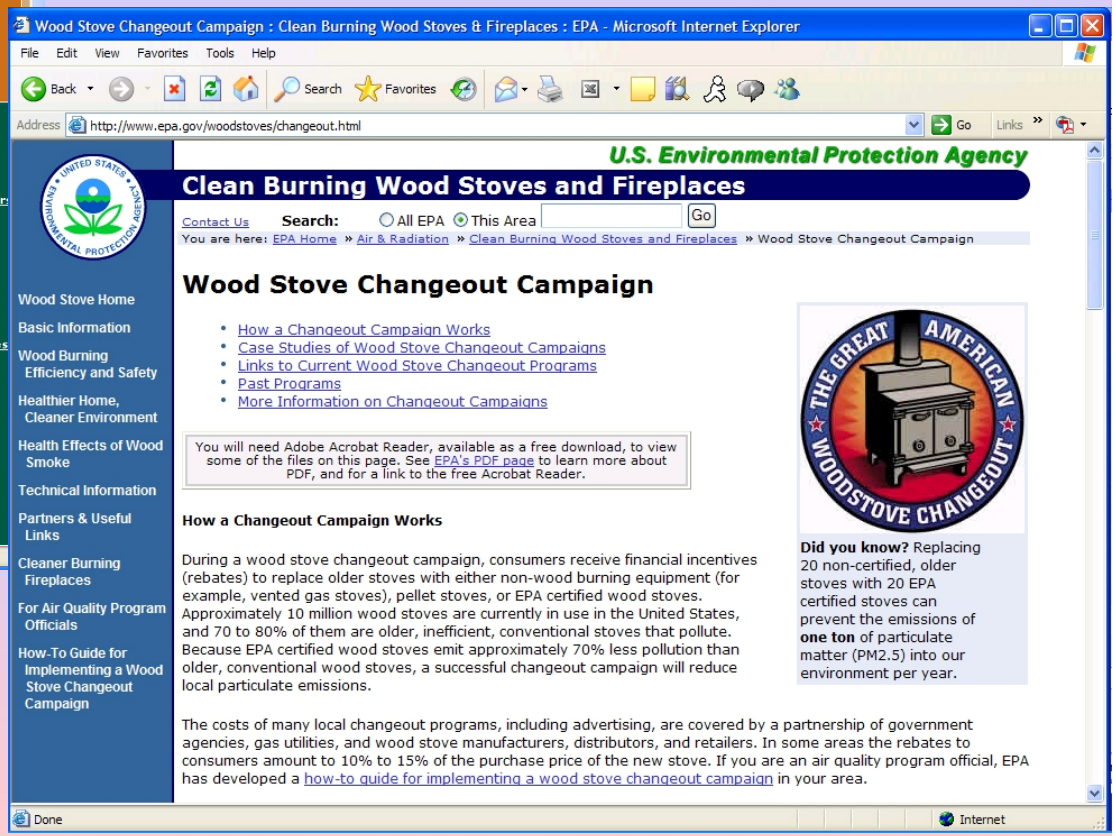
Clean Burning Wood Stoves and Fireplaces

- A wood stove or fireplace adds warmth and ambiance to your home. This site offers information to help you choose an EPA certified stove (PDF) or another cleaner burning hearth appliance (e.g., gas or pellet stove) and use it efficiently and safely. Air quality program officials will find information to help them support and develop programs for addressing residential wood smoke.
- Basic Information - What you need to know to select a cleaner burning hearth product for your home, including retailers and installers in your area.
- Wood Burning Efficiency and Safety - Tips on proper stove installation, good wood burning practices, and how you can ensure safer heating of your home. Also, see our Clean Burn Fact Sheet (PDF) Healthier Home, Cleaner Environment - Learn the impacts of wood smoke on your health and the environment, as well as the quality of the air where you live.

THE GREAT LAKES BINATIONAL TOXICS STRATEGY



www.woodstovechangeout.org



www.epa.gov/woodstoves

Canada

EPA

Great Lakes Binational Toxics Strategy Sediment Goal Update

Dave Cowgill
USEPA
Great Lakes National Program Office
May 23, 2007

Sediment Challenge

- U.S. and Canadian Challenge: Complete or be well advanced in remediation of priority sites with contaminated bottom sediments in the Great Lakes Basin by 2006.

THE GREAT LAKES BINATIONAL TOXICS STRATEGY

Canada

EPA

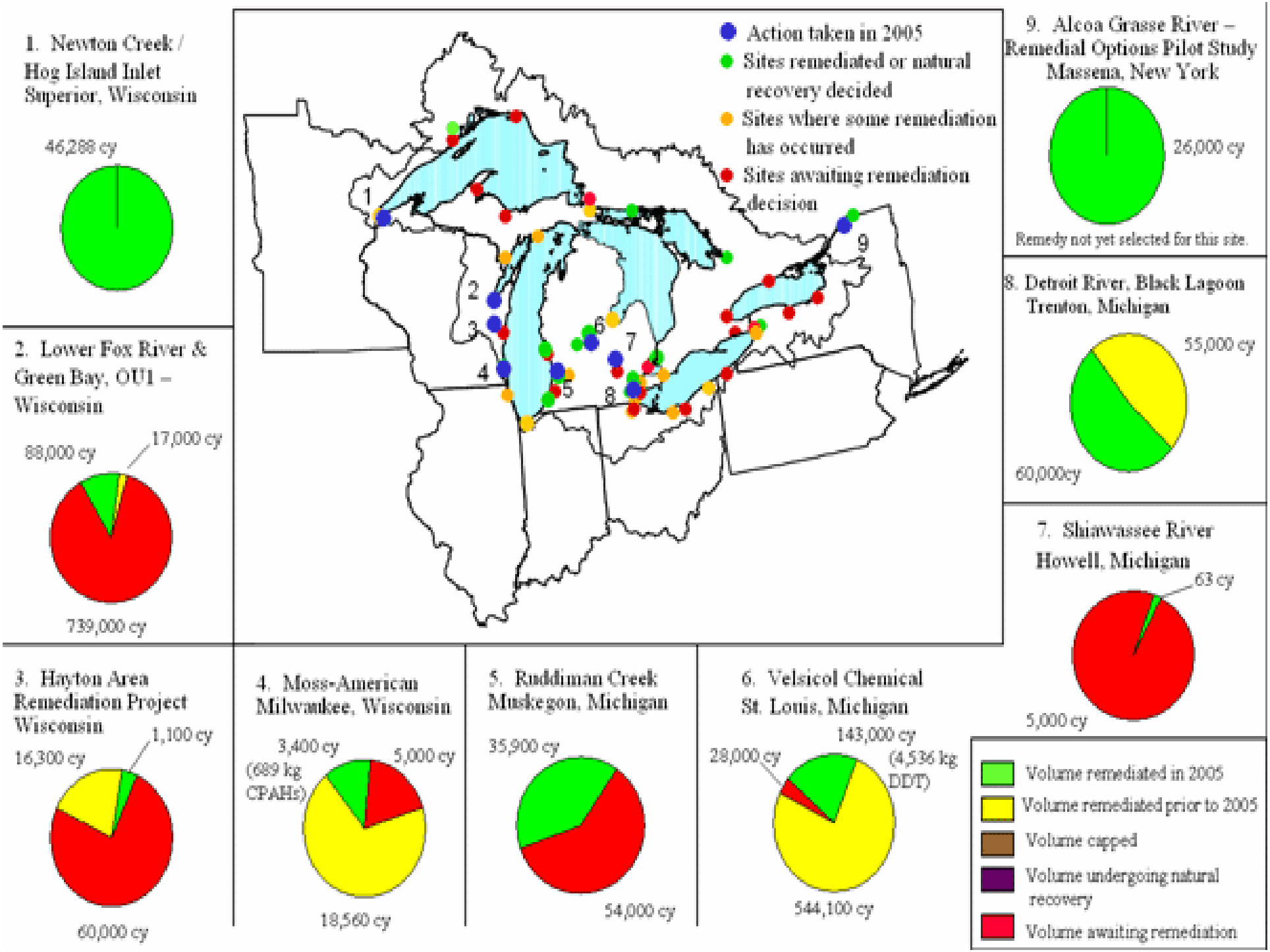
So, How much is left?

- Early estimates of 40,000,000 cubic yards of contaminated sediment in the Great Lakes with an estimated cost of $2-6 Billion for remediation
- The U.S. Policy Committee has recently updated those estimates as a commitment made in the Great Lakes Strategy to be approximately 75 million cubic yards, and an associated cost range from $1.5-4.5 Billion for remediation

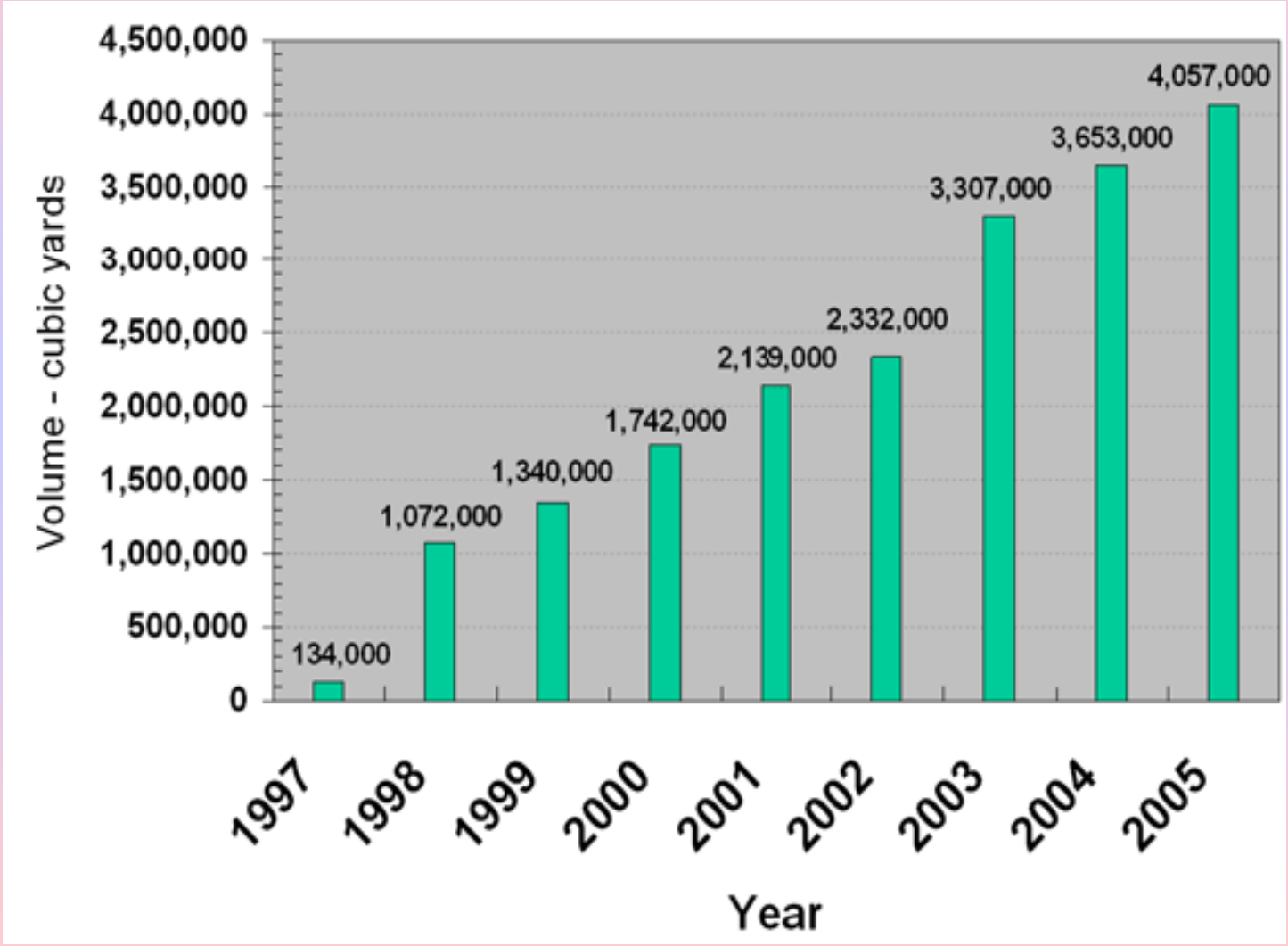
Magnitude of the Problem on the U.S. Side

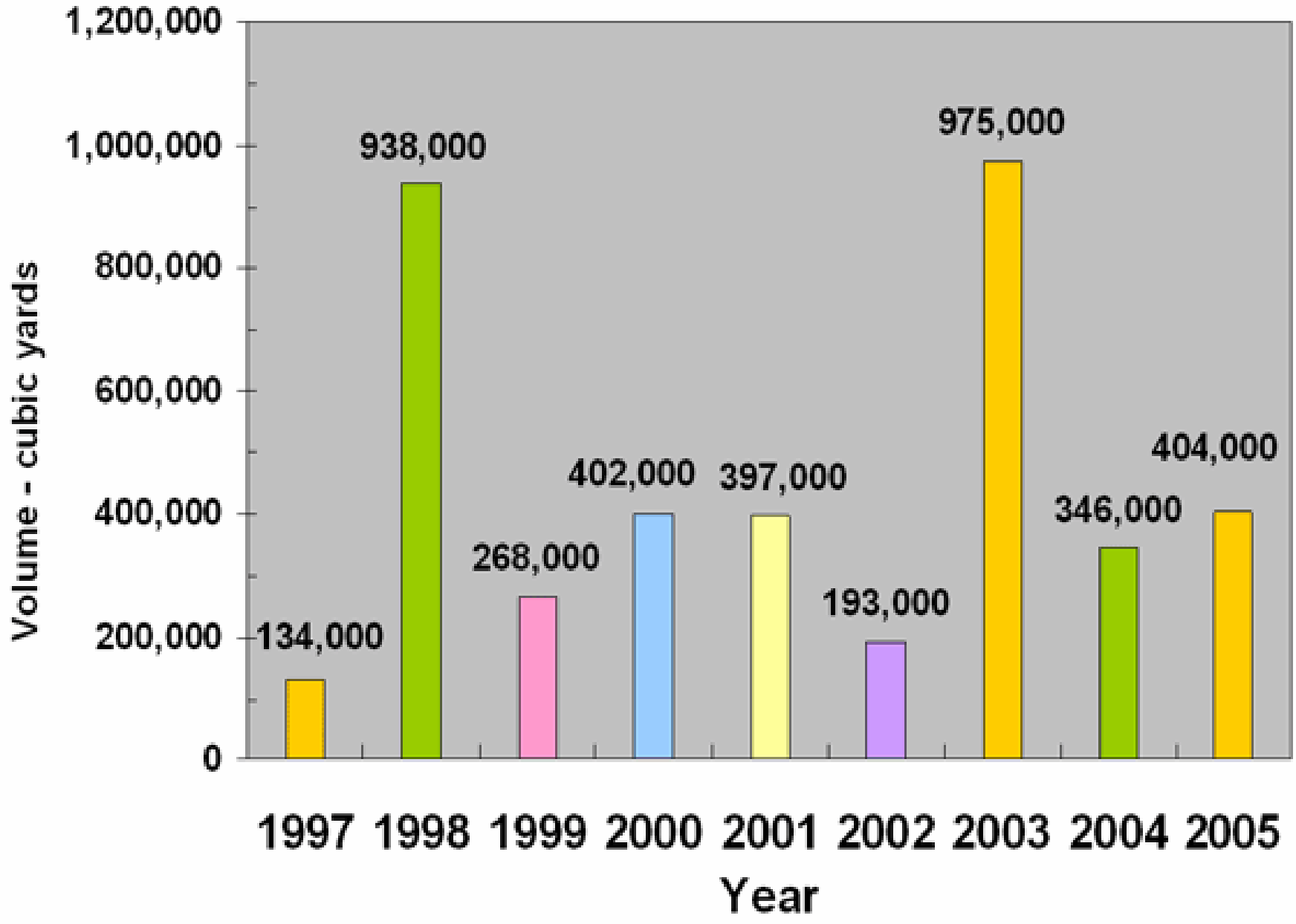
Recent Estimates provided by Great Lakes States:

- ~ 75 Sites identified
- ~75,000,000 cubic yards identified
- ~46,000,000 cubic yards to be remediated



Tracking Volume





Tracking Contaminant Mass

Table 6-1. Progress on Sediment Remediation in the Great Lakes since 1997*

Area of Concern/Location	Cumulative Mass of Contaminant Remediated (kg)												Cumulative Volume Sediments Remediated (1997 thru 2006 cy)	Volume Sediments Remediated (2006 cy)	Ultimate Disposition
U.S. Rivers															
Ashtabula River, OH															
Black River (L. Erie), OH															
Black River, OH															
Black River, MI*															
Buffalo River, NY															
Cuyahoga River, OH															
Deer Lake - Carp River, MI															
Detroit River, MI															
Ecorse Creek, MI															
Grand Calumet River, IN*															
Kalamazoo River, MI															
Manistique River, MI															

Canadian Progress – Sediment Remediation 1997-2006

- Remediation completed, underway or planned at 4 locations
- Decisions made for non-intervention/natural recovery at 2 locations
- Further 9 sites are subject to ongoing site characterization and decisions on intervention/remediation are pending